The Menopausal Transition and Suicide Risk: A Mixed Methods Investigation of Lived Experiences and Contributing Factors

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List of Abbreviations

AFAB – Assigned Female at Birth

AMAB – Assigned Male at Birth

APA – American Psychological Association

BD – Bipolar Disorder

BDNF – Brain-Derived Neurotrophic Factor

BMI – Body Mass Index

CDC – Centres for Disease Control and Prevention

CNS – Central Nervous System

DHEA – Dehydroepiandrosterone

DSM – Diagnostic and Statistical Manual of Mental Disorders

E1 – Estrone

E2 – Estradiol

E3 – Estriol

GABA – Gamma-Aminobutyric Acid

GAD – Generalised Anxiety Disorder

GP – General Practitioner

HPA – Hypothalamic-Pituitary-Adrenal

HRT – Hormone Replacement Therapy

IMV – Integrated Motivational-Volitional

IPV – Intimate Partner Violence

LGBTQIA+ – Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual+

LJMU – Liverpool John Moores University

MDD – Major Depressive Disorder

MENO-D –Menopausal Depression Scale

MHCP – Menopause Healthcare Professional

MHT – Menopausal Hormone Therapy

MMAT – Mixed Methods Appraisal Tool

MMQ – Mood and Menopause Survey

MMR – Mixed Methods Research

NICE – National Institute for Health Care and Excellence

NHS – National Health Service

NSSI – Non-Suicidal Self-Injury

ONS – Office for National Statistics

PHQ-9 – Patient Health Questionnaire-9

PMDD – Premenstrual Dysphoric Disorder

POI – Primary Ovarian Insufficiency

PPD – Postpartum Depression

PPP – Postpartum Psychosis

PTSD – Post-Traumatic Stress Disorder

SEND – Special Educational Needs and Disabilities

SSRI – Selective Serotonin Reuptake Inhibitor

UK – United Kingdom

USA – United States of America

WHO – World Health Organisation

"Elm" by Sylvia Plath (1981, *Collected Poems)*

I know the bottom, she says. I know it with my great tap root:
It is what you fear.
I do not fear it: I have been there.

Is it the sea you hear in me,
Its dissatisfactions?
Or the voice of nothing, that was your madness?

Love is a shadow.
How you lie and cry after it
Listen: these are its hooves: it has gone off, like a horse.

All night I shall gallop thus, impetuously,
Till your head is a stone, your pillow a little turf,
Echoing, echoing.

Or shall I bring you the sound of poisons?
This is rain now, this big hush.
And this is the fruit of it: tin-white, like arsenic.

I have suffered the atrocity of sunsets.
Scorched to the root
My red filaments burn and stand, a hand of wires.

Now I break up in pieces that fly about like clubs.
A wind of such violence
Will tolerate no bystanding: I must shriek.

The moon, also, is merciless: she would drag me

Cruelly, being barren.
Her radiance scathes me. Or perhaps I have caught her.

I let her go. I let her go
Diminished and flat, as after radical surgery.
How your bad dreams possess and endow me.

I am inhabited by a cry.
Nightly it flaps out
Looking, with its hooks, for something to love.

I am terrified by this dark thing
That sleeps in me;
All day I feel its soft, feathery turnings, its malignity.

Clouds pass and disperse.
Are those the faces of love, those pale irretrievables?
Is it for such I agitate my heart?

I am incapable of more knowledge.
What is this, this face
So murderous in its strangle of branches?——

Its snaky acids hiss.
It petrifies the will. These are the isolate, slow faults
That kill, that kill, that kill.

Abstract

This thesis aimed to make a critical contribution to the understanding of suicidality during the menopausal transition, a topic that remains underexplored in both research and clinical practice. Despite increasing recognition of menopause-related mood disturbances, suicidality is often overlooked, poorly recorded, and inadequately addressed in both mental health and menopause care. Gaps in the literature include a focus on hormonal mechanisms without consideration of lived experience, minimal integration of suicidality into menopause research or screening frameworks, and a lack of data capturing how hormone replacement therapy (HRT) may influence psychological outcomes. To address these gaps, this thesis comprised four interrelated studies, utilising systematic review, qualitative and quantitative approaches.

First, a systematic review of 19 papers examined suicidality among menopausal women, highlighting limitations in conceptual frameworks, diagnostic criteria, and the neglect of suicidality as a standalone outcome. Building on these findings, a quantitative study then analysed routine clinical data from 957 patients accessing specialist menopause care. This study assessed the impact of different HRT regimens on depressive symptoms and suicidality (PHQ-9 and MENO-D), revealing significant improvements over time, particularly for those receiving oestrogen, progesterone, and testosterone combinations. Additionally, a thematic analysis of interviews with 42 women explored the lived experience of perimenopausal distress and suicidality, revealing cyclical symptomology, embodied distress, and fragmented care experiences. Then, a qualitative study was conducted with 28 informal and formal carers to understand how suicidality during menopause is recognised, interpreted, and supported by those close to the women directly affected. The final chapter integrated findings across studies, offering a novel framework for understanding menopausal suicidality that considers hormonal, psychosocial, and systemic factors.

Collectively, this thesis highlights that suicidality during menopause is both under-recognised and under-researched, often falling between service thresholds and clinical categories. The findings suggest that HRT may support psychological recovery for some women, but also emphasise the need for earlier detection, better training for healthcare providers, and integrated models of care that do not treat suicidality in isolation from the

hormonal context. The thesis concludes by calling for policy and education reform, targeted screening, and gender-informed suicide prevention strategies that reflect the realities of menopausal distress.

Declaration

I declare that no portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Published and Papers Under Review Included in This Thesis

Hendriks, O., McIntyre, J. C., & Rose, A. K., Sambrook, L., Reisel, D., Crockett, C., Newson, L., Saini, P. (2025). Suicidality During the Menopausal Transition: A Systematic Review of Risk and Protective Factors. (Revised and Resubmitted – Women's Health)

Hendriks, O., Saini, P., Kamal, A., McIntyre, J. C., Rose, A. K., Reisel, D., Newson, L., McIntyre, J.C. (2025). Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort. (Submitted – BJPsyc International)

Hendriks, O., McIntyre, J. C., & Rose, A. K, Crockett, C., Newson, L., Saini, P. (2025). The Mental Health Challenges, Especially Suicidality, Experienced by Women During the Perimenopause and Menopause: A Qualitative Study. (Accepted – Women's Health)

Hendriks, O., McIntyre, J. C., & Rose, A. K., Crockett, C., Newson, L., Saini, P. (2025). Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives. (Submitted – International Journal of Qualitative Studies on Health and Well-being)

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Glynne, S., Kamal, A., McColl, L., Newson, L., Reisel, D., Mu, E., **Hendriks, O**... Kulkarni, J. (2025). Transdermal oestradiol and testosterone therapy for menopausal depression and mood symptoms: retrospective cohort study. *The British Journal of Psychiatry*, 1–10. https://doi.org/10.1192/bjp.2025.101

Hendriks, O., Wei, Y., Warrier, V., & Richards, G. (2022). Autistic Traits, Empathizing-Systemizing, and Gender Diversity. *Archives of Sexual Behaviour*, *51*(4), 2077–2089. https://doi.org/10.1007/s10508-021-02251-x

Richards, G., Wei, Y., & **Hendriks, O**. (2020). Self-Measured Digit Ratio (2D:4D) and Gender Variance. *Endocrine Practice: Official Journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists*, *26*(2), 250–251. https://doi.org/10.4158/1934-2403-26.2.250

Conference Presentations

Suicide and Self-Harm Research North West (SShareNoW), Preston (2022). Oral Presentation on my PhD plan and topic area.

LJMU Faculty of Health Conference, Liverpool (2022). Poster Presentation on an early overview of the thesis, including the rationale for focusing on suicidality during menopause and proposed methodological approach.

Suicide and Self-Harm Research Group (SSHRG) Conference, Liverpool (2022). Oral Presentation introducing the initial scope and direction of the research, with a focus on why suicidality during the menopausal transition warrants investigation, and how the project aimed to address this through a multi-method research design.

LJMU Postgraduate Researchers Day, Liverpool (2024). Oral Presentation outlining the full PhD project, highlighting the mixed-methods design, key findings from qualitative and quantitative studies, and implications for mental health practice.

Early/Mid-Career Suicide and Self-Harm Researchers' Forum, Glasgow (2024). Poster Presentation summarising the thesis findings, with a focus on the integration of qualitative and quantitative results relating to suicidality in perimenopausal women.

Royal College of Psychiatrists International Congress, Edinburgh (2024). Poster Presentation on the real-world quantitative data linking different HRT regimens to changes in depressive symptoms and suicidality among midlife women attending specialist clinics.

European Symposium on Suicide and Suicidal Behaviour, Rome, Italy (2024). Oral Presentation on the thesis-wide findings concerning suicidal ideation in menopause, the role of hormone sensitivity, and challenges in clinical recognition and support.

Suicide and Self-Harm Research Group (SSHRG) Conference, Liverpool (2024). Oral Presentation exploring key findings from across the thesis related to suicidal ideation during menopause, with a focus on hormonal sensitivity as a contributing factor and the systemic barriers to clinical identification and intervention.

Suicide and Self-Harm Research North West (SShareNoW), Liverpool (2024). Oral Presentation discussing the specific risks of suicidality in perimenopause, gaps in public health strategy, and the need for gender- and stage-specific suicide prevention frameworks.

Newson Health Conference, London (2025). Oral Presentation on the lived experience of suicidality in perimenopause, drawing on qualitative and quantitative findings and discussing how clinical models and HRT prescribing can be improved.

International Association for Suicide Prevention (IASP), Vienna, Austria (2025).

Oral Presentation on both qualitative studies investigating lived experience of suicidality among women and their supporters during menopause.

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every win (no matter how small), and for listening to every single rant, spiral, and doubt with grace and love. You never let me forget what I was capable of. I can't imagine doing this without you, and I wouldn't have wanted to.

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And finally, to my goddaughter, Florence – may this be just one example of what's possible. I hope it shows you that your voice matters, your aspirations are valid, and you have every right to take up space in this world. This thesis is for you.

Chapter 1: Introduction

Suicide is a significant global public health issue, claiming the lives of 726,000 people each year (World Health Organisation [WHO], 2024). On average, that is one person every 40 seconds worldwide (WHO, 2021). Each suicide represents a profound tragedy with far-reaching impacts on loved ones and the broader community.

Although men are more likely than women to die by suicide, women are more likely to experience suicidal ideation and attempt suicide at a higher rate than men (Berardelli et al., 2022); an effect that is particularly prevalent in mid-life (Office for National Statistics [ONS], 2024). This thesis focuses on exploring suicidality in women during mid-life, encompassing ideation, behaviours, and attempts, within the context of menopause and its unique challenges. This chapter begins by defining key concepts and terminology used throughout the thesis, then explores suicide prevalence and specific risk factors for suicidality, followed by an overview of suicide theories and female suicide risk across the lifespan. A focused discussion on suicide during menopause will examine the role of healthcare services and treatment options. Finally, the chapter highlights key gaps in the literature and outlines how the thesis addresses these gaps in subsequent chapters.

Key Concepts and Nomenclature

This thesis makes novel contributions to research methods, literature, and practice related to the mental health challenges faced by women during menopause, including suicidality and its associated behaviours, ideations, and outcomes. To provide a foundation for this research, it is essential to begin with an overview of the key concepts and terminology used throughout the thesis.

Terminology in the context of suicide and mental health can vary significantly depending on academic discipline, research settings, and geographical regions, among other factors (Silverman, 2016). The use of clear, standardised terminology is essential to foster shared understanding, enhancing communication between researchers, practitioners, and policymakers, and effectively guiding both research and clinical practice (Heilbron et al., 2010). Terms such as suicidal crisis, ideation, thoughts, feelings, intent, behaviours, suicide attempts, deliberate self-harm and non-suicidal self-injury are employed across disciplines, yet their meanings and usage are not always consistent (Silverman, 2006; 2016), which can hinder the comparison of findings across studies and interfere with the development of effective interventions (Deming et al., 2021).

The inherent complexity of suicidality contributes to challenges in defining and categorising these behaviours. For example, the distinction between self-harm and suicidal behaviours is often blurred, as the intent behind actions can shift rapidly (McDermott & Roen, 2016). For this thesis, it is critical to clarify the use of language that is implemented throughout. The term 'suicidality' is used to describe the risk of suicide, encompassing a spectrum from non-specific suicidal thoughts and behaviours to those involving intent or a plan to die (Winstanley, 2020); a broad definition that aligns with the multifaceted nature of suicidality, and allows for a comprehensive examination of its various manifestations. 'Suicidal ideation' refers to thoughts about ending one's life, which can range from fleeting considerations to persistent and detailed planning (Andover et al., 2012; Robinson et al., 2018), while 'self-harm' or 'non-suicidal self-injury' (NSSI) is defined as intentionally injuring oneself through actions such as cutting, poisoning or burning (Chandler et al., 2011; Klonsky et al., 2014). Although distinct from suicidal behaviours, NSSI is a significant risk factor for future suicide attempts (Griep & MacKinnon, 2022), however, self-harm remains a controversial topic in the literature.

Some researchers argue that NSSI and self-harm with suicidal intent have distinct risk factors and should be examined separately (Mars et al., 2014), while others suggest that self-harm can occur both with and without suicidal intent simultaneously (Hamza et al., 2012). For the purpose of this thesis, NSSI and self-harm with suicidal intent will be treated as separate constructs, with self-harm involving suicidal intent regarded as a 'suicide attempt', describing a non-fatal act where there is evidence of intent to end one's life (Andover et al., 2012; Silverman, 2007). Additionally, to avoid stigmatising language this thesis uses terms like 'death by suicide' and 'died by suicide' as the term 'commit suicide' implies criminality or moral wrongdoing (Lester, 2021).

In a research context, minimising the use of negatively associated language and adopting terminology that accurately and sensitively describes experiences fosters a more constructive and empathetic dialogue, which not only facilitates open conversations about risk and resilience, but also supports and validates those bereaved by suicide, enabling researchers to engage with these sensitive topics more thoughtfully and inclusively (Beaton et al., 2013).

Suicide Prevalence in the General Population

In this thesis, experiences of suicidality during menopause are investigated in relation to risk factors, care options, and treatment outcomes. Understanding the factors that increase the risk of suicidality is essential for identifying who is more prone to experiencing severe mental health challenges during menopause and how these risks interact with access to appropriate care. While this thesis specifically examines these dynamics in menopausal women (addressed in Chapter 5), it is informed by and intersects with broader research on suicidality risk factors and prevalence across diverse populations.

Global Prevalence

Globally, suicide remains a critical public health issue, with 726,000 people dying by suicide each year and 73% of suicides occurring in low- and middle-income countries

(WHO, 2024). Geographical differences in suicide rates are observed worldwide, with Greenland having the highest global rate at 59.6 per 100,000, and Palestine having the lowest rate at 0.78 per 100,000 (World Population Review, 2024). Additionally, geographical differences are recorded across the four nations of the United Kingdom (UK). In 2023, there were 6,069 suicides registered in England and Wales, which is 11.4 deaths per 100,000 people. This is an increase compared with 2022, which reported 5,642 deaths (10.7 deaths per 100,000 people), marking the highest suicide rate seen since 1999 (ONS, 2024).

A regional divide in suicide rates is evident within England, with London recording the lowest rate among all regions, while the North West of England reports the highest (ONS, 2024). In Northern Ireland, the age-standardised suicide rate in 2022 was slightly higher than England at 12.3 deaths per 100,000, which is a decrease from 14.3 deaths in 2021 (Northern Ireland Statistics and Research Agency [NISRA], 2023). Notably, Scotland reported the highest suicide rates within the UK in 2022 with 13.9 suicides per 100,000 (House of Commons Library, 2025).

Demographic Risk Factors for Suicidality

Age

Age-specific data reveal further insights, with suicide being the third leading cause of death among 15–29-year-olds globally (WHO, 2024), and more than half (52.1%) of global suicides occurring before the age of 45 years (WHO, 2019). While these figures underscore the global burden of suicide in younger populations, they stand in contrast to national trends. In England and Wales, historical data from the Office for National Statistics (ONS) indicate that suicide rates have consistently been highest among men in midlife, particularly those aged 40 to 59 (ONS, 2019). Table 1 illustrates this trend clearly, showing a persistent elevation in midlife suicide rates across recent decades. Although the exact rates have fluctuated slightly over time, the enduring concentration of suicides in this age group – especially among men – remains a significant public health concern. Moreover, Table 1 also reveals a more recent rise in suicide rates among midlife women, suggesting that this age-related vulnerability is no longer gender-specific (ONS, 2024).

This shift highlights the need to reframe suicide prevention efforts to address midlife as a high-risk period. Notably, while WHO data offer a global overview, the ONS data presented here reflect trends specific to England and Wales, underscoring the importance of regional context in suicide epidemiology.

Table 1. Average Suicide Rates per 100,000 by Age Group, Sex, and Decade.

Data Source: Office for National Statistics (2024).

Decade	Male 20-29	Male 40-49	Male 50-59	Female 20-29	Female 40-49	Female 50-54
1980s	15.2	22.5	19.7	4.8	6.3	5.9
1990s	20.1	23.8	20.2	6.1	6.7	6.0
2000s	16.7	24.1	21.8	5.4	6.8	6.5
2010s	13.4	25.3	22.0	4.6	7.9	7.1
2020s	12.1	25.5	24.7	4.3	8.7	9.2

Ethnicity

Suicide rates are likely to vary between culturally distinct populations within nations, as suicide is a universal concept but has different meanings worldwide (Troya et al., 2022). Global evidence suggests that individuals from certain ethnic minority groups may exhibit higher rates of self-harm (regardless of suicidal intent) compared to majority groups (Al-Sharifi et al., 2015), as they are more likely to experience language barriers, acculturative stress, and discrimination which can influence suicide risk (Forte et al., 2018; Liam et al., 2021). Within the UK, self-harm and suicide rates, as well as their risk factors, vary significantly among ethnic minority groups compared to White populations, with disparities also observed across age and gender groups (Cooper et al., 2010), for

example, South Asian females report higher rates of self-harm than South Asian males or White females (Husain et al., 2006).

However, research into the relationship between suicide and ethnic minority status presents mixed findings, as ethnicity is not currently recorded on death certificates in the UK, or routinely collected in other European countries (Knipe et al., 2024). Some studies suggest higher suicide rates among ethnic minority groups, while others report the opposite (Forte et al., 2018), a variation that may stem from differing cultural interpretations of suicide, cultural protective factors, and the varying mortality rates of suicide by country (Colucci & Lester, 2012). For instance, in the US, religion is often regarded as a protective factor against suicide (Dervic et al., 2004), whereas in China, it is considered a potential risk factor for suicide (Le et al., 2004). A systematic review encompassing 128 studies and 6,026,103 suicide deaths across 31 countries found weak statistical evidence that ethnic minority groups are more likely to die by suicide (Troya et al., 2022), however, another systematic review analysing 31,644 suicide deaths in England and Wales found that Gypsy or Irish Travellers significantly had the highest suicide rates out of all ethnicities (Knipe et al., 2024). Regardless, grouping all ethnic minorities homogeneously overlooks critical contextual differences that are needed to enhance suicide prevention strategies for marginalised groups (Troya et al., 2022).

Sexuality

While the ONS does not provide detailed data on additional variables or specific at-risk populations associated with death by suicide, it is vital to consider groups that may face heightened vulnerability to suicidal thoughts and behaviours. Among these, members of the LGBTQIA+ (lesbian, gay, bisexual, transgender, queer, intersex, and asexual+) community are reported to experience suicidal ideation and attempts at rates two to four times higher than their heterosexual, cisgender (those who identify with their sex assigned at birth) counterparts (Kirakosian et al., 2023), with lesbian and gay adults more than three times as likely to report NSSI than heterosexuals (Kidd et al., 2023). Contributing factors include unsupportive family environments, discrimination, exposure to violence, and alcohol misuse (Eigenman, 2023; Pitman et al., 2021).

Furthermore, LGBTQIA+ individuals may encounter significant barriers to accessing care and experience disparities within healthcare systems, exacerbating their challenges (Aleshire et al., 2019).

The Trans Experience

Trans individuals face widespread marginalisation globally, including within healthcare systems, as accessing both basic medical care and gender-affirming treatments are frequently reported (Safer et al., 2016). Even when gender-affirming care is available, the evidence guiding medical treatment for these individuals is often of low quality, and healthcare provider knowledge on trans health frequently remains inadequate (Ortiz-Martínez & Ríos-González, 2017). Interestingly, women seeking menopause care often encounter similar systemic issues, such as treatment shortages, limited evidence-based guidance and insufficient expertise in healthcare (Barber & Charles, 2023; Hendriks et al., in press). However, there is limited guidance regarding what occurs when transgender individuals who menstruate reach the age at which menopause typically occurs. Little is known about the transgender experience of menopause, including how to manage gender-affirming hormone replacement therapy (HRT) alongside menopausal hormone therapy (MHT) (Cheung et al., 2023). To date, there has been one study exploring the menopausal experience of AMAB (assigned male at birth) transgender women taking oestrogen HRT for gender-affirming purposes, revealing a general dismissal of menopause as relevant among participants (Mohamed & Hunter, 2018). Additionally, there is a complete lack of resources exploring the experiences of AFAB (assigned female at birth) transgender men taking gender-reaffirming testosterone HRT, or AFAB individuals with other gender identities who may not be undergoing any gender-reaffirming HRT; a gap highlighting broader issues with how data is collected and analysed concerning gender identity and health.

Despite growing recognition of the intersection between gender identity and suicide, data collection often relies on binary, biological classifications of sex, as seen in resources like the ONS, which, consequently, does not allow for nuanced insights into how gender identity intersects with suicidality. However, if we look at sex differences in suicidal

behaviour, studies reveal stark differences between males and females, with males more likely to die by suicide and females more likely to engage in non-fatal suicidal behaviours (Barrigon & Cegla-Schvartzman, 2020). As such, the findings and interpretations presented throughout this thesis must be understood within the constraints of this binary framework. Future research should address this gap by designing studies that are inclusive of diverse gender identities, using affirming language, and collecting gender identity data that goes beyond biological sex, to ensure more inclusive and representative understandings of menopause-related suicidality.

Socioeconomic Factors

Suicide risk factors encompass a wide range of biopsychosocial, environmental, and socio-cultural influences that increase the likelihood of suicidal behaviours, often intersecting and varying across age, gender, and individual circumstances. Adverse childhood experiences, such as abuse and neglect, are strongly linked to lifelong suicidality, with evidence suggesting a causal relationship between early trauma and later suicidal ideation or suicide attempts (Afifi et al., 2009; Fergusson et al., 2008). Mental health conditions remain one of the strongest predictors of suicide, particularly depression, bipolar disorder (BD), substance use disorder (including alcohol), and schizophrenia, with co-morbid conditions significantly heightening risk (Harris & Barraclough, 1994; Mortenson et al., 2000). Prior self-harm is also a key indicator, with hospital presentations for self-harm connecting to an elevated risk of suicide within five years (Carroll et al., 2014; Cooper et al., 2005). Additionally, socioeconomic pressures, such as unemployment and financial hardship, are prominent risk factors for suicidality, particularly around men, as societal expectations around masculinity often compound these stresses (Barr et al., 2012; Chang et al., 2013). Finally, adverse life events like bereavement, divorce, family breakdown, conflict or domestic violence further contribute to suicide risk (Cheng et al, 2000, Gururaj et al, 2004; Yang et al, 2005).

While much of the literature on suicide risk factors is valuable and should not be overlooked, it is heavily androcentric, focusing on male experiences and often failing to capture the unique vulnerabilities faced by women (Dalca et al., 2013). For the purpose

of this thesis, which focuses on suicidality over the female lifespan – specifically during the menopausal transition – risk factors specific to women will be examined, highlighting the importance of adopting gender-sensitive strategies in suicide prevention. This emphasis on female-specific risk provides an important foundation for engaging with broader theoretical models of suicide, many of which have historically overlooked or underexplored gendered dimensions. The following section outlines key theoretical frameworks that inform current understandings of suicidality and offers a basis for evaluating their relevance and limitations when applied to the experiences of women in midlife.

Theories of Suicide

Understanding suicidality during the menopausal transition requires more than documenting prevalence and identifying risk factors; it also necessitates an exploration of the theoretical frameworks that help explain why suicidal ideation and behaviour occur during this life stage. This section reviews the dominant models of suicide and examines their relevance to midlife women, particularly those experiencing menopause-related mental health challenges. In doing so, it highlights both the explanatory value and the gendered limitations of existing theories, and considers how hormonal and psychosocial factors unique to this population may require more nuanced or expanded frameworks.

The persistent barriers in recognising and treating menopause-related depression not only delay appropriate intervention but may also contribute to increased suicidality during this life stage. With suicide rates highest among women aged 50–54 (ONS, 2024) – a period that aligns with menopause – it is crucial to consider how untreated depressive symptoms, exacerbated by hormonal fluctuations, may contribute to suicidal ideation and behaviour. While research increasingly acknowledges the role of hormonal instability in mood regulation (National Institute of Care and Excellence [NICE], 2024; Schmidt et al., 2015; Soares & Zitek, 2008) the psychological mechanisms underlying suicidality in menopausal women remain underexplored.

Understanding suicidality during menopause requires engagement with broader theoretical frameworks of suicide, which offer insight into the psychological, biological,

and social factors that may interact during this vulnerable transition. However, suicide research has long been shaped by theoretical models that often fail to account for the unique gendered experiences influencing suicidality, as many dominant theories are androcentric, developed primarily based on male suicidality patterns, which can limit their relevance for women, particularly those experiencing menopause-related mental health challenges (Mallon, 2018).

Traditional Theories of Suicide and Gender Bias

One of the earliest and most influential models, Durkheim's (1897) sociological theory, categorised suicide into egoistic, altruistic, anomic, and fatalistic types. Durkheim associated higher suicide rates in men with weaker social bonds and saw women's lower suicide rates as a reflection of their stronger ties to family and religion (Lehmann, 1995). However, this fails to consider that women's suicidal ideation and attempts may be underreported due to social stigma and differing methods, and it does not acknowledge how reproductive transitions such as menopause shape suicide risk. While foundational, Durkheim's theory reflects the social norms and gender roles of the 19th century and does not account for contemporary shifts in gendered expectations, mental health recognition, or the evolving sociocultural landscape that now influences suicide risk across the lifespan.

Similarly, Ribeiro and Joiner's (2005) Interpersonal Theory of Suicide (ITS) posits that perceived burdensomeness and lack of belongingness drive suicidal desire, which can be useful in explaining social aspects of suicide, but it is often applied without gendered nuance, overlooking how hormonal changes, vasomotor symptoms, and increased psychiatric vulnerability during menopause contribute to distress and perceived burdensomeness (Hadlaczky & Wasserman, 2009). Furthermore, the Stress-Diathesis Model (van Geeringen, 2012) suggests that suicide risk is influenced by genetic predisposition and environmental stressors; however, although having a greater biological focus, this model largely ignores hormonal influences and how fluctuations in oestrogen and progesterone impact neurotransmitter systems, mood regulation, and suicidality.

The Integrated Motivational-Volitional (IMV) Model of Suicide

The Integrated Motivational-Volitional (IMV) Model of Suicidal Behaviour (O'Connor, 2011) is widely adopted in suicide research today. It provides a three-phase framework for understanding suicidality, integrating biological, psychological, and social influences. The IMV model consists of three phases: 1) the pre-motivational phase, which focuses on biological, psychological, and social risk factors; 2) the motivational phase, which centres on feelings of defeat, humiliation, and entrapment (key predictors of suicidal ideation), and 3) the volitional phase, which determines whether ideation translates into suicidal behaviour and is influenced by moderators such as impulsivity, access to means, and past suicide attempts (O'Connor, 2011; O'Connor et al., 2018). Empirical studies support key elements of the IMV model, for example, Cleare and colleagues (2021) found that individuals who attempted suicide had higher levels of defeat, entrapment, acquired capability, and impulsivity than those engaging in non-suicidal self-harm. Hanlon and colleagues (2025) also reported that men in suicidal crisis had higher levels of entrapment and psychological distress at initial assessment for a brief psychological therapy. Similarly, a recent systematic review confirmed that the IMV model's defeat-entrapment-suicidal ideation pathway is well-supported (Souza et al., 2024).

Despite its strengths, the IMV model has several limitations that reduce its applicability to women, particularly those experiencing menopause. One of the primary concerns is its androcentric origins, as, like many theories of suicide, and research in general (Upchurch, 2016), the IMV model was developed primarily based on male-dominated samples, raising concerns that it fails to capture gendered experiences of suicidality. Research indicates that women's suicidality tends to be chronic and influenced by hormonal fluctuations, caregiving responsibilities, and social pressures, whereas male suicidality is often acute and linked to external stressors (Canetto & Lester, 1995). This distinction suggests that the IMV model's emphasis on defeat and entrapment as immediate triggers may not fully capture the long-term, cumulative nature of suicidal ideation in women.

Additionally, research evaluating the IMV model has predominantly focused on younger populations or psychiatric inpatients, with limited representation of midlife women. The model has been tested in Chinese adolescents (mean age = 14.07 years), making its applicability to menopausal suicidality uncertain (Li et al., 2020), and in an Iranian sample with a mean age of 22.7 years, which further reinforces the youth-centric focus of IMV research (Sardarzehi et al., 2023). While some studies have included psychiatric inpatients aged 18–81 years, the mean age was 36.9 years, suggesting that midlife women may still be underrepresented (Lucht et al., 2020). A systematic review examining 138,365 participants across 100 studies testing the IMV model did not specify whether midlife women were adequately included, raising concerns about the generalisability of findings to menopausal suicidality (Souza et al., 2024). These studies highlight a significant research gap, as menopausal women face unique neurobiological and psychosocial stressors that may shape their suicidal trajectories differently than the younger populations typically studied within the IMV framework.

Theoretical Hormonal Considerations

While there is no specific hormonal or biochemical theory of suicide, biological factors – alongside the influence of gender constructs and social norms – play a role in the gender paradox of suicidal behaviour, as hormonal differences may contribute to the disparity in suicide rates between men and women. For example, testosterone, a hormone typically more prevalent in males, has been linked, albeit inconsistently, to impulsivity and aggression (Carré et al., 2017). These traits are associated with a greater likelihood of men using high-lethality methods of suicide, which aligns with hegemonic masculinity's emphasis on risk-taking and control (Dalca et al., 2013). However, data on the relationship between testosterone and suicidal behaviour have been less clear. Some studies report that low testosterone levels are associated with suicidality (Markianos et al., 2009), while others suggest high testosterone levels predict suicidality (Zhang et al., 2015), with some reporting no association at all (de Wit et al., 2020). Additionally, the effects of testosterone on suicidality may differ across the male lifespan (Rice & Sher, 2017), adding further complexity to understanding its relationship with suicidal behaviour.

In women, prospective evidence indicates that higher baseline testosterone levels can predict future suicide attempts in women with BD (Sher et al., 2014), and higher testosterone has also been significantly associated with suicidal ideation in adolescent females with depression (Liu et al., 2021). Similar trends have been observed in women living in rural areas, although findings did not reach statistical significance, likely due to sample size limitations (Zhang et al., 2015). Conversely, other research has found no significant association between testosterone and suicidality specifically in women with schizophrenia (Klemenčić et al., 2021). These conflicting results may reflect differing mechanisms across diagnoses, ages, or contexts, and testosterone's influence may vary across the lifespan (Rice & Sher, 2017), complicating efforts to establish a consistent pattern.

Conversely, oestrogen's mood-regulating properties may offer a protective effect for women, as it has been found to modulate serotonin pathways, enhance serotonin receptor activity, and increase serotonin synthesis (Halbreich & Kahn, 2001), even improving symptoms of mental health conditions such as schizophrenia in women (Kulkarni, 2023). Furthermore, low oestrogen levels have been linked to a higher likelihood of suicide attempts in women (Baca-Garcia et al., 2010), emphasising its protective role in women's mental health. However, while oestrogen may provide some protection, it does not eliminate the risks entirely, particularly as societal and behavioural factors also interrelate and play a critical role in female suicidality (Audenaert et al., 2005).

Understanding Biological Sex and Gender Identity

The discussion of gender and sex in literature is crucial to understanding suicidality, yet the binary classification of 'male' and 'female' that the literature often adopts fails to encompass the complexities of gender identity. Unlike sex, which is constituted by anatomophysiological differences, gender is viewed as a historical and social construction, influenced by social roles, behaviours, and meanings (Barroso Martínez, 2022). However, in practice, sex and gender are deeply intertwined, and it is often difficult to confidently isolate whether observed differences in thoughts, behaviours, or health

outcomes are the result of biological sex, socialised gender roles, or their interaction (Schiebinger, 2024). For the purpose of this thesis, the terms 'female', 'girl', and 'woman/women' are used to refer to individuals who were assigned female at birth (AFAB), including those who have experienced or currently experience menstruation.

Traditional classifications of gender typically used in research studies do not account for individuals whose gender expression or identity differs from their sex assigned at birth, which may include those who identify as transgender, non-binary, or other diverse gender identities (Cartwright & Nancarrow, 2022). The terms 'transgender' or 'trans' are adjectives for those whose gender identity does not align with their assigned sex at birth, with individuals identifying as a binary gender (e.g. trans man or trans woman), or a non-binary gender (e.g. pangender, gender fluid or agender), however, many non-binary people also call themselves transgender and consider themselves part of the transgender community (GLAAD, 2025). In recent years, research into the intersection of gender identity and suicidality has grown, particularly in the United States (US), highlighting concerning rates of suicidal ideation and attempted suicide, specifically since transgender restricting laws were enacted in 2023 (Lee et al., 2024). In the UK, although research on transgender adults is scarce, similar trends are generally indicated (Bailey, Ellis, & McNeil, 2014).

The Gender Paradox of Suicidal Behaviour

Significant differences in male-to-female suicide ratios have consistently been observed for both non-fatal suicide attempts and fatal suicides, with women exhibiting higher rates of suicidal ideation and attempts, while men experience higher mortality rates from suicide (Canetto & Sakinofsky, 1998; Henderson et al., 2005). In developed countries, the male-to-female suicide ratio ranges from 2:1 in Western Europe to 4:1 in the US (Hawton & van Heeringen, 2009), but an estimated two-thirds of all non-fatal suicide attempts are made by women (Murphy, 1998). This pronounced gender disparity in suicidal behaviour has been termed the 'gender paradox of suicidal behaviour' (Canetto & Sakinofsky, 1998), which encompasses not only biological factors but also the influence of societal norms

and cultural expectations, which differ significantly between sexes (Gask, 2015; Möller-Leimkühler, 2003).

The Role of Social Constructs and Gender Norms

A key explanation for this disparity lies in the social constructs of hegemonic masculinity and femininity: systems deliberately designed to perpetuate gender inequality by prioritising men's ascendancy over women's, rewarding those who promote masculinity as the superior ideal (Connell, 1987; Gramsci, 1971). Hegemonic masculinity emphasises dominance, self-reliance, and emotional restraint, discouraging men from seeking help and viewing vulnerability as a feminine trait; otherwise referred to as a weakness (McKenzie et al., 2018). This self-imposed rejection of femininity, expectation of strength and emotional stoicism often prevents men from accessing support for suicidal thoughts and feelings, possibly contributing to their higher suicide rates (Mallon et al., 2019). It also promotes other traditionally masculine traits such as self-destruction, impulsivity, and violence, qualities that significantly heighten the risk of suicide (Mościcki, 1994), with high traditional masculinity being directly linked to a higher likelihood of death by suicide (Coleman et al., 2020). These traits are further reflected in men's tendency to choose more lethal and definitive methods of suicide, which result in higher fatality rates compared to women (Mościcki, 1994). Deviance from these traditional masculine gender traits and roles can often be a source of significant stress for men. For instance, unemployment – a role historically associated with women – can challenge the traditional expectation of men as primary providers for their families, potentially exacerbating their vulnerability to stress and mental health struggles (Möller-Leimkühler, 2003).

On the other hand, hegemonic femininity – although under-conceptualised in current literature (Paechter, 2018) – represents idealised feminine characteristics defined as 'womanly' that also reinforce masculine power (Townsend, 2023). These characteristics include being emotionally warm, nurturing, and docile, and prioritising others over themselves (Townsend, 2023). Because of this, society expects women to continue prioritising their roles as professionals, caregivers, or partners, disregarding any

emotional distress they may be experiencing (Hendriks et al., in press). Additionally, as societal gender norms often position motherhood as a central expectation of women (Szekeres et al., 2023), this role may act as a protective factor against fatal suicide as the perceived importance of caregiving responsibilities can discourage women from ending their lives (Qin & Mortensen, 2003). Furthermore, these feminine gender roles often emphasise the development of multiple, strong familial and social networks that provide emotional and health-related support, which may also serve as a protective factor; however, men are less likely to engage in such traditionally feminine activities (Shin & Park, 2023).

The Trivialisation of Suicidal Women and Suicidal Femininity

Suicidal femininity encompasses societal norms that shape expectations around how suicidal women are supposed to behave, dictating what is considered an acceptable reason for their suicidality, which creates a hierarchy of behaviours linked to different expressions of femininity (Townsend, 2024a). A harmful stereotype within this framework suggests that suicidal women are not truly intent on dying but are instead manipulating others, particularly male partners, through their suicidal thoughts, often painting them as emotionally unstable, overly reactive, or "crazy" (Canetto, 1997, p. 143). These heteronormative, negative portrayals align with broader stigmatisations of femininity, including the "drama queen" label, which accuses women of exaggerating their emotions, and the "attention seeker" trope, which dismisses their distress as inauthentic or manipulative (Canetto, 1997, p. 143). As a result, women who do not conform to traditional feminine expectations may have their expressions of suicidality minimised or dismissed, sometimes with fatal consequences when genuine risk is overlooked.

This pattern of minimising women's suicidality is evident in research into female suicide cases, where harmful stereotypes often lead to the trivialisation, medicalisation, and dismissal of their distress. Mallon and colleagues (2016) examined records of women who had died by suicide, finding that their experiences were often sanitised in medical reports and reduced to vague diagnoses like "severe mental health problems" (Mallon et al., 2016, pp. 669–70). Townsend (2023) explored cases of young women who died by

suicide and found that those who reacted to their own sexual assault in ways considered 'masculine' – such as expressing anger – were labelled as "bad girls" (para. 1) by professionals, a negative framing that persisted after their deaths, influencing coronial interpretations. Similarly, research on suicidal mothers shows how they were undermined both before and after their deaths due to not fitting the idealised role of a 'good' mother or compliant patient (Townsend 2024b). These narratives perpetuate stereotypes that portray suicidal women as irrational, mentally unstable, and fundamentally unreliable (Canetto, 1997). This illustrates how gendered expectations shape perceptions of both suicidality and suicide itself and highlights the extent to which women's experiences of distress are pathologised, which is especially significant when considering how male suicide is often framed in a more valorised manner (Canetto, 1997). Both fatal and nonfatal suicides among women tend to be dismissed as mere 'cries for help', a framing that diminishes the gravity of their distress (Balt et al., 2021; Canetto, 1997, Canetto & Lester 1998).

While nonfatal suicidality in women is often feminised and labelled as attention-seeking behaviour, women who die by suicide are frequently misunderstood or dismissed. Coronial investigations, social discourse, and suicide research tend to reduce them to harmful stereotypes, often obscuring the complex factors contributing to their distress. Additionally, the assumption that women are inherently more likely to seek help for suicidality can overlook the deep-rooted causes of their suffering (Townsend, 2024a; Townsend, 2024b).

Female Suicidality

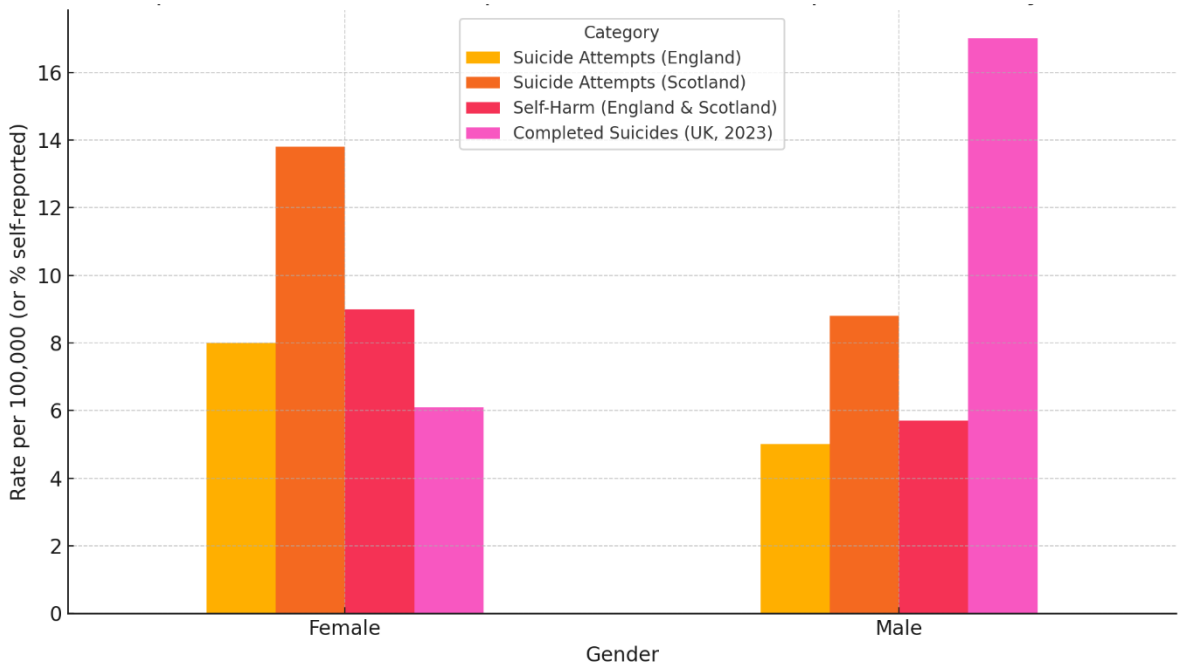
Each year, more than 250,000 women worldwide die by suicide (Institute for Health Metrics and Evaluation, 2017). In England, approximately 8% of women have attempted suicide compared to 5% of men (McManus et al., 2016); a trend also found in Scotland, where these rates are 13.8% and 8.8%, respectively (O'Connor et al., 2018), as seen in Figure 1. Suicide ranks as the second-leading cause of death for women in the postpartum period (Chin, 2022), and the third-leading cause of death for girls aged 15-19 years (Rodway et al., 2020), with rates for women in the UK being the highest since 1994

(ONS, 2024). In Australia, girls aged 15-19 years had the highest rates of ambulance attendance and hospitalisations for suicidal ideations, planning, and fatal and non-fatal suicide attempts among all age and gender groups (Australian Institute of Health and Welfare, 2024). Additionally, in the US, there has been an increase in female suicide rates across recent years in women 25 years and older (National Centre for Health Statistics, 2024), interestingly alongside a rise in gun ownership among women (Miller, Zhang, & Azrael, 2021); a suicide method traditionally associated with males (Siegel & Rothman, 2016). These shifts in female suicide patterns suggest that female suicidality is evolving in ways that challenge conventional understandings, therefore, it is important to closely monitor these changes and conduct further research to understand the underlying factors.

Additionally, research has consistently found that people who engage in self-harm are more likely to make a suicide attempt than people with no history of self-harm (Chan et al., 2016; O'Connor et al., 2018), and that it may act as a gateway to suicide (Grandclerc et al., 2016), as those who engage in it may develop a greater cognitive ability for lethal self-harm (O'Connor & Kirtley, 2018). Notably, women are more likely to engage in self-harm compared to men with approximately 9% of women and 5.7% of men self-report engaging in NNSI in England, and similar rates occurring in Scotland (9% and 5.7%, respectively; McManus et al., 2016).

Figure 1. Comparison of Suicide Attempts, Self-Harm, and Completed Suicides by Gender.

Data Source: McManus et al. (2016), O'Connor et al. (2018), Office for National Statistics (2024).



Despite the significance of suicidality among women, suicidology has historically prioritised research on men and masculinity, often sidelining women's experiences (Townsend, 2024a, Townsend, 2024b), perhaps, as discussed previously, due to their comparatively lower death rates (Mallon et al., 2016). However, this disparity is particularly concerning given that women face a distinct, unique set of risk factors compared to men, that alter throughout the lifespan, including hormonal changes during puberty, pregnancy, postpartum, and menopause. When these biological transitions intersect with female societal pressures such as caregiving responsibilities, gender-based violence, and body image expectations, vulnerabilities are created that are fundamentally different from those encountered by men (Barroso Martínez, 2022). This has led to gaps in our understanding of how these layered challenges uniquely impact on women, leaving their experiences underrepresented in prevention strategies. Addressing female suicidality thus requires a comprehensive, intersectional approach that

considers not only the biological and psychological underpinnings, but also the structural and systemic inequalities, and societal pressures that perpetuate these risks across the entire female lifespan (Gask, 2024). The sections that follow adopt a life course perspective to explore the key biopsychosocial issues that influence female mental health and suicide risk at different stages of life.

Hormonal Transitions and Suicidality Across the Reproductive Lifespan

Adolescence and Menarche

Adolescence is a critical window for female mental health as suicide is the leading global cause of death among girls aged 15–19 (Rodway et al., 2020), and suicide attempts are significantly more common in adolescent females than males (Eaton et al., 2012; Wunderlich et al., 2001). This may be due to the neuroendocrine changes during puberty, which can influence emotion regulation, impulse control, and mood (Ho et al., 2021). Additionally, the sudden rise and cyclic fluctuation of oestrogen and progesterone can destabilise mood in biologically sensitive girls, increasing vulnerability to anxiety, depression, and suicidality (Steiner et al., 2003; Schulz & Sisk, 2016).

Menarche (the first menstrual period) marks another transitional point, as studies show that girls who have reached menarche report higher levels of depressive symptoms (Joinson et al., 2012), with early menarche being associated with an elevated risk of NSSI and suicide attempts (Roberts et al., 2019; Tondo et al., 2017). Social stigma, sexualisation, and the mismatch between physical and emotional maturity (i.e. the 'maturation disparity hypothesis'; Kim et al., 2021) may exacerbate these effects, particularly in those maturing earlier than peers.

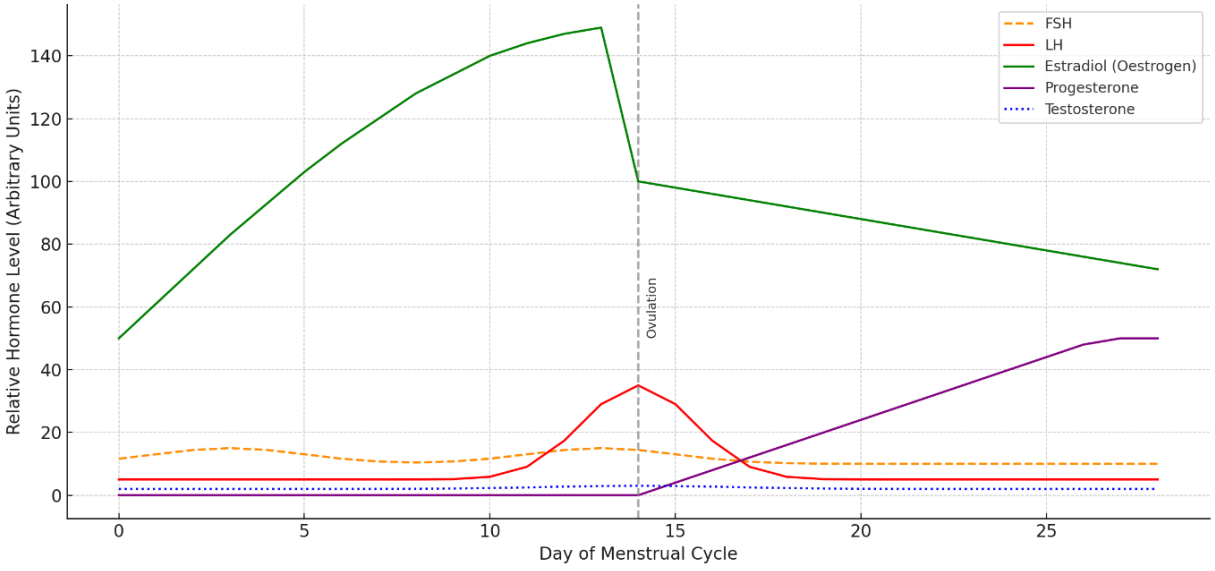
The Menstrual Cycle and Premenstrual Dysphoric Disorder (PMDD)

Following menarche, girls begin to experience cyclical hormonal changes associated with the menstrual cycle, which can significantly influence emotional regulation, mood stability, and risk for suicidality across the reproductive years. The menstrual cycle comprises four distinct phases: menstrual, follicular, ovulatory, and luteal, each of which

are characterised by unique patterns of oestrogen and progesterone fluctuation (as seen in Figure 2) that may exert varying effects on mental health (Ossewaarde et al., 2010). During the menstrual phase, levels of both oestrogen and progesterone are at their lowest, a hormonal state that has been consistently linked to heightened depressive symptoms and increased vulnerability to suicidal ideation and behaviours in susceptible individuals (Baca-Garcia et al., 2010). Although the follicular phase is generally associated with a gradual rise in oestrogen – which is often linked to improved mood, energy, and cognitive functioning (Toffoletto et al., 2014) – some studies suggest that psychiatric symptoms may persist or even emerge during this phase as a delayed response to the preceding hormone withdrawal, particularly in those with heightened sensitivity to hormonal shifts (Handy et al., 2022). Notably, suicidality tends to increase again during the late luteal phase, a time when both oestrogen and progesterone levels rapidly decline in the absence of fertilisation, often resulting in mood instability, irritability, and feelings of hopelessness that are strongly associated with increased suicide risk (Saunders & Hawton, 2006).

Figure 2. Hormonal Fluctuations Across the Menstrual Cycle.

Data Source: Carr, B. R., & Wilson, J. D. (1987). Disorders of the ovary and female reproductive tract. In E. Braunwald, K. J. Isselbacher, R. G. Petersdorf, et al. (Eds.), *Harrison's Principles of Internal Medicine* (11th ed., pp. 1818–1837). McGraw-Hill.



Premenstrual dysphoric disorder (PMDD), a severe mood disorder during the luteal phase, presents another elevated risk, as women with PMDD are nearly seven times more likely to attempt suicide and four times more likely to experience suicidal ideation compared to those without it (Prasad et al., 2021). Co-occurring conditions like post-traumatic stress disorder (PTSD), panic disorder, and childhood trauma significantly increase this risk (Machado et al., 2024), yet PMDD remains underdiagnosed and undertreated (Pataki et al., 2024), especially in adolescents (King & Wilkinson, 2022).

Reproductive Years: Pregnancy and Postpartum

As women enter the reproductive years, the psychological effects of hormonal transitions intersect with social stressors such as caregiving, career pressures, and relationship changes. Pregnancy often stabilises mood due to high oestrogen and progesterone (Steiner et al., 2003), but for women with existing mental health issues, these changes can heighten distress (Osman & Bahri, 2019). Abrupt postpartum hormonal withdrawal is strongly linked to postpartum depression (PPD) and, in rarer cases, postpartum psychosis (PPP), both of which are associated with increased suicidality (Bloch et al., 2000; Maguire, 2020). Suicide is now one of the leading direct causes of maternal death in the UK and Ireland between six weeks and one year post-birth (Knight et al., 2023).

Psychiatric conditions such as major depressive disorder (MDD) and generalised anxiety disorder (GAD) are strong predictors of suicidality during pregnancy (Gelaye et al., 2016), with early pregnancy being a critical period for biologically sensitive women due to rapid hormonal shifts (Pires et al., 2023). Barriers to care (e.g. stigma, poor screening, and systemic inequalities) further compound risk, especially in minoritised groups such as Black women in the US, who report higher rates of antenatal suicidal ideation (Haight et al., 2024; Salihu et al., 2022). Intimate partner violence (IPV) also significantly increases suicide risk during pregnancy, especially when combined with poor mental health and social isolation (Alhusen et al., 2015; Martin et al., 2007), with women from low-income

or rural backgrounds possibly being more vulnerable due to limited access to care (Makayoto et al., 2013).

Perinatal Loss and Abortion

Miscarriage and stillbirth are profoundly distressing events linked to elevated suicide risk. Women who experience stillbirth have a fivefold risk of suicide, and miscarriage nearly quadruples that risk (Weng et al., 2018). Additionally, PTSD, often following such losses, is more prevalent in women and contributes to suicidality (Fox et al., 2020). These effects may be amplified by disenfranchised grief and systemic inequalities, particularly among Black women who face higher miscarriage rates and poorer support (Hardeman et al., 2020; Tommy's, 2021).

The psychological effects of abortion are more debated. While some studies suggest increased suicide risk post-abortion (Fergusson et al., 2006), others attribute this to pre-existing factors like IPV or mental health issues (Mota et al., 2010). Studies comparing women who were granted versus denied abortions found no differences in suicidal ideation (Biggs et al., 2018), highlighting the complex interplay between individual, societal, and contextual factors.

Maternal Mental Health Beyond the Perinatal Period

Suicidality in mothers extends beyond the perinatal period, as women continue to experience heightened suicide risk across the maternal years due to the cumulative impact of hormonal fluctuations, caregiving burdens, and systemic barriers. Indeed, the highest rates of maternal suicide often occur after the first year postpartum (Lysell et al., 2018; Sörberg Wallin et al., 2022). Even women who choose not to have children are impacted by these societal and hormonal pressures, underscoring the importance of inclusive, lifespan-informed suicide prevention strategies.

Motherhood and Suicidality

Motherhood is a complex and demanding life stage which can create an overwhelming mental burden for some women. Studies indicate that maternal mental health is strongly influenced by caregiving pressures, social isolation and the constant balancing act of meeting familial and professional responsibilities (Sawyer et al., 2010). However, the protective nature of having children has been a topic of debate within the maternal suicide literature. While some studies suggest that motherhood interacts with societal expectations of 'intensive motherhood' – an ideology that holds the individual mother primarily responsible for childrearing (Hays, 1996) – and perceived inadequacies in caregiving roles, contributing to increased maternal suicidality (Townsend, 2024), others report that women with children living at home have a lower suicide risk compared to childless women or mothers whose children have left home (Driver & Abed, 2004). However. research on maternal suicide beyond the perinatal period is sparse, creating the misleading perception that risk factors for suicidality dissipate after a child's first birthday. Once a child turns one, interest in maternal suicidality often diminishes, and mothers are typically grouped within the broader category of women in general within suicidology (Townsend, 2024), which, as previously discussed, results in their experiences being overshadowed by the focus on male suicidality.

Risk Factors in Motherhood. Financial strain, social isolation, and relationship difficulties are common during the maternal years, particularly for single mothers or those in abusive or strained relationships, living in lower-income households (Mistry et al., 2007). Financial hardship and lack of support significantly increase the likelihood of depression, distress, and chronic mental health issues in single mothers (Brown & Moran, 1997; Crosier et al., 2007). Mental health issues have been consistently found to be a risk factor for suicide attempts in mothers during the perinatal period (Gressier et al., 2017; Orsolini et al., 2016), however, suicide research has not extended past this period of motherhood. Financial difficulties have also been identified as a risk factor among parents overall (Austin & Shanahan, 2021; Stack & Meredith, 2017), however, their specific impact on mothers has not been independently examined.

Importantly, demographic shifts mean that an increasing number of women are becoming mothers later in life, often in their late 30s or 40s (Sobotka & Beaujouan, 2021). As a result, the early years of motherhood for many women now overlap with the onset of perimenopause, which can compound psychosocial burden. Studies have shown that older first-time mothers navigating perimenopause experience heightened uncertainty, emotional strain, and challenges balancing caregiving demands with their own health changes (Morgan et al., 2010; Morgan et al., 2012). These overlapping transitions may amplify the risk of psychological distress and, in turn, suicidality; a dimension that remains largely underexplored in both maternal mental health and menopause research.

Additionally, mothers of children with special educational needs and disabilities (SEND) face supplemental emotional and logistical challenges, including heightened caregiving demands and dealing with the stigma associated with their children's conditions (Allenidekania & Zulfia, 2020), which can subsequently lead to discrimination or judgement, further alienating mothers and increasing their distress. Mothers of SEND children also experience elevated social isolation, family burden, and financial strain due to reduced work opportunities or increased medical and educational expenses (Emerson & Hatton, 2007; Şahin et al., 2024), exacerbating stress and mental health issues, possibly increasing suicidality risk in this population. Gilson and colleagues (2018) reported that 22% of mothers with a child with a disability experienced suicidality, however, a recent study by O'Dwyer and colleagues (2024) found that a considerably higher 42% of parents caring for children with a long-term illness or disability had experienced suicidal thoughts or behaviours, with the majority of participants being mothers (n=716) compared to just 26 fathers. Additional research has also highlighted elevated rates of suicidality among mothers of childhood brain tumour survivors (Lucas et al., 2015), and mothers of children with autism (Akram et al., 2019), further consolidating the mental health challenges faced by these populations. Despite the significant challenges faced by mothers of SEND children, research around suicidality for this population remains inadequate.

Maternal mental health challenges, if left untreated, also create a cyclical pattern of mental health risks as children exposed to maternal depression and suicidality are at a higher risk of developing depression, anxiety, and suicidal ideation themselves (Klimes-

Dougan et al., 1999), particularly during adolescence (Brand, 2009). Certain research has found that children of mothers with chronic and severe depression symptoms are three times more likely to experience suicidal ideation, even in the absence of a juvenile depression diagnosis (Hammerton et al., 2015). This can operate through various mechanisms including the heritability of depression, disruptions in attachment, exposure to negative maternal behaviours and emotions, and the broader stressors within the child's environment (Goodman & Gotlib, 1999), therefore it is essential to implement holistic and comprehensive interventions to address these interconnected factors. Addressing maternal depression and suicidality not only improves outcomes for mothers, especially those navigating complex cases like perimenopause and caregiving, but also serves as a critical, protective factor for the mental health and wellbeing of their children, breaking the cycle of vulnerability and promoting healthier developmental trajectories for future generations.

Childless Guilt. Childlessness, whether voluntary or involuntary, is often perceived as a deviation from societal norms, particularly for women, and sometimes produces or exacerbates mental health vulnerabilities. Involuntary childlessness is seen as less stigmatised than voluntary childlessness; however, societal attitudes still frame childlessness as a failure to fulfil traditional female gender roles, which causes feelings of shame and mental distress in both groups, reinforcing a sense of inadequacy (Lampman & Dowling-Guyer, 1995). Involuntary childlessness is often internalised by women, who believe it is a reflection of personal failure, further compounding psychological distress, including anxiety and depression, which is made worse by the stigma attached to childlessness (Miall, 1986).

The grief associated with involuntary childlessness is profound and long-lasting. Fieldsend and Smith (2020) found that women in midlife experiencing childlessness often grapple with 'ambiguous loss', a form of grief that persists due to the intangible and unresolved nature of their experience. This prolonged emotional burden can lead to symptoms of depression and anxiety, both of which are known risk factors for suicidality (Hawton et al., 2013). Gouni and colleagues (2022) further underscore how societies with strong pronatalist values stigmatise involuntary childlessness as a 'failure', worsening

feelings of inadequacy and despair, as in these societies, women are pressured to conform to traditional roles of motherhood. Both voluntary and involuntary childlessness are associated with significant psychological and social pressures in these contexts, including self-blame, stigma, depression, and isolation, challenges that are further intensified by cultural misunderstandings and lack of societal awareness, with infertile women in some cultures considered to carry 'evil eye' and encouraged to be avoided (Sherazi et al., 2023). Hiiemäe (2017) adds another dimension by exploring cultural beliefs about guilt and supernatural punishments such as divine punishment, ancestral wrath, or karma, noting how these narratives amplify feelings of inadequacy, depression, and hopelessness in women experiencing involuntary childlessness.

Voluntary childlessness remains a stigmatised choice in pronatalist societies where motherhood is seen as central to female identity, as societal norms often frame it as deviant or undesirable, placing moral pressure on women to conform to traditional gender roles (Baum, 1982). Women may be labelled as psychologically disturbed or selfish, creating feelings of unease and guilt that undermine their sense of identity (Wager, 2000). While Jeffries and Konnert (2002) found that voluntarily childless women report higher psychological wellbeing and lower regret compared to those who are involuntarily childless, the burden for many stems from external pressures rather than dissatisfaction with their choices. Cultural and religious ideologies further push this stigma, as pronatalist values and religious affiliations portray voluntary childlessness as an offensive rejection of transition gender norms, leading women in these contexts to feel judged or excluded from their communities (Hook, 2012). This intersection of cultural expectations and personal choice can create significant psychological strain, as women navigate competing pressures between their career aspirations, personal values, and societal constructs of motherhood (Shaw, 2011). Consequently, guilt, anxiety, and depression are formed, particularly in communities where femininity and self-worth are closely tied to motherhood (Kelly, 2010). Although Park (2002) discusses strategies employed by voluntary childless women to combat stigma (e.g. redefining their identity and asserting personal fulfilment), these efforts are often undermined by persistent societal norms. The ongoing psychological burden of being perceived as 'lesser than' can heighten emotional distress and possibly lead to suicidality, particularly in contexts

where women feel unsupported or isolated due to their choices, however, research has yet to explore this. By addressing the intersection of cultural expectations, religion, and gender norms, efforts can be made to foster environments where women are valued for their individuality, regardless of their reproductive choices.

The psychological distress associated with childlessness – whether voluntary or involuntary – reflects a broader societal expectation that ties women's identity to their reproductive capacity. This pressure does not diminish with age but rather shifts into new forms as women transition into mid- and later life.

The Menopausal Transition

The menopausal transition is a key transitional period in the female lifespan, marking the end of monthly menstruation and reproductive capability due to a loss of ovarian follicular function (i.e. the ovaries stop releasing eggs for fertilisation; WHO, 2024) in natural menopause, or it can be initiated by certain surgeries or treatments in the case of medically induced menopause. It also ushers in a complex interplay of hormonal, physiological, and psychological changes, often accompanied by profound physical and mental health challenges, which, for some women, may increase the risk of suicidality. Despite this, menopause has historically been underexplored in suicidology, leaving a significant gap in understanding how the transition contributes to psychological distress. Given the prevalence of depression, anxiety, and mood instability during this period (Vaziri-Harami et al., 2024), menopause must be examined as a critical risk factor for female suicidality.

Menopause is not a single event, but a prolonged biopsychosocial transition typically spanning several years and marked by significant hormonal, physiological, and emotional shifts (see Figure 3 for hormonal fluctuations across the lifespan, including menopausal years). According to the Stages of Reproductive Aging Workshop (STRAW) framework, this transition is composed of three distinct phases: perimenopause, menopause, and postmenopause, each with unique physiological and psychological implications (Harlow et al., 2012). While menopause is often framed as a reproductive transition, emerging research underscores its broader neurological and psychological

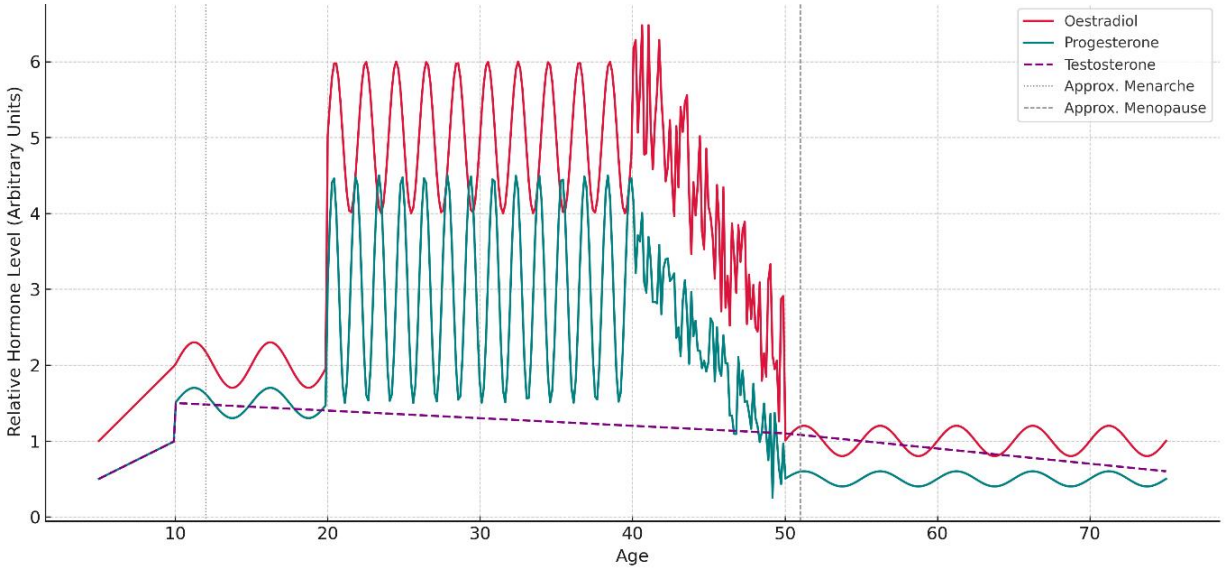
implications (Brinton et al., 2015), particularly in increasing the risk of mood disorders and suicidality (Kulkarni, 2018; An et al., 2022; Usall et al., 2009).

Perimenopause: The Onset of Hormonal Instability

Perimenopause, which can begin up to a decade before menopause, usually occurs between the ages of 40 and 44, however for some women, it can start earlier (WHO, 2024). This stage is characterised by significant variability in ovarian hormone levels, particularly in oestrogen and progesterone levels (see Figure 2). For this section of the thesis, oestrogen will be examined in one of its three primary forms: estrone (E1), estradiol (E2), and estriol (E3). E1 is the dominant form of oestrogen postmenopause, E2 is the most potent and prevalent during the reproductive years, and E3 is primarily produced during pregnancy. Among these, E2 plays a particularly crucial role during perimenopause (van Iten, 2016; Lu & Tian, 2023).

Figure 3. Hormonal Fluctuations Across the Female Lifespan.

Data Source: STRAW Framework (Harlow et al., 2012).



Both E2 and progesterone are vital in regulating mood and cognitive function by modulating neurotransmitter systems, including serotonin, dopamine, and gamma-

aminobutyric acid (GABA) (Halbreich & Kahn, 2001; Steiner et al., 2003), which leads to irregular menstrual cycles and a host of physical and mental symptoms including hot flashes, night sweats, mood disturbances, and cognitive impairments (Behrman & Crockett, 2023). During perimenopause, erratic declines in E2 levels directly affect the central nervous system (CNS) and said mood regulation pathways, leading to emotional reactivity, increased anxiety, and overall reduction in mood stability (Freeman et al., 2006). Research indicates that perimenopausal women are at a greater risk of developing MDD than premenopausal women (Gordon et al., 2015; Stute et al., 2019; Yap et al., 2021), even in those without a prior history of depression (Gordon et al., 2020; Mulhall et al., 2018). Research also shows that perimenopausal women are at risk of exacerbating or developing anxiety and other emotional disorders (Berhman & Crockett, 2023; Li et al., 2016; Pizova et al., 2021), BD (Musial et al., 2021), and schizophrenia (Sommer et al., 2023). Given that mental health issues are a primary risk factor for suicidality at other times of hormonal deficiency (Owens & Eisenlohr-Moul, 2021), this heightened susceptibility places perimenopausal women in a uniquely vulnerable position.

Multiple studies have identified perimenopausal women as particularly susceptible to suicidal thoughts and behaviours when compared to premenopausal and postmenopausal women. A large-scale study conducted by An and colleagues (2022) on middle-aged Korean women found that those in perimenopause were 33% more likely to experience suicidality compared to premenopausal women, with postmenopausal women also displaying an increased risk. These findings align with other studies that found perimenopause to be a significant predictor of suicidal ideation at follow-up periods spanning four to nine years, even after accounting for prior instances of suicidality (Nakanishi et al., 2013). Similarly, a multi-country study across six European nations revealed that perimenopausal women faced a seven-fold increased risk of suicidal ideation compared to both premenopausal and postmenopausal women, and men of the same age bracket (Usall et al., 2009). Notably, this increased risk was independent of diagnosed mood or anxiety disorders, suggesting that the physiological and psychosocial changes of perimenopause alone may be strong contributors to suicidality (Usall et al., 2009). Another study set in Poland found that 4% of their cohort reported experiencing suicidal thoughts during perimenopause (Gojdz et al., 2013), with

another study finding that 14% of women who had attempted suicide were experiencing perimenopausal depression at the time of their attempts (Studd, 2014), however the inclusion of women with premenstrual disorders and postnatal depression raises concerns about sample homogeneity and the potential influence of prior hormonal vulnerabilities. Additionally, Blackmore and colleagues (2008) documented a case series in which a woman attempted suicide at age 44 while experiencing severe perimenopausal symptoms, such as hot flashes and erratic menstrual cycles.

However, a major issue in menopause research is the frequent failure to differentiate between perimenopause, menopause, and postmenopause, with many studies grouping all women under the broad category of 'menopausal women'; a generalisation that obscures critical distinctions in mental health risk, including suicidality, making it difficult to pinpoint when vulnerability is highest. The lack of specificity in research limits clinical understanding and intervention efforts, as different menopausal stages present distinct hormonal, psychological, and physiological challenges, as discussed earlier and shown in Figure 2. One of the primary reasons for this oversimplification is the design limitations of many large-scale epidemiological studies, making it unclear whether suicidality is driven by the intense hormonal fluctuations of perimenopause or the long-term physiological and psychosocial changes of postmenopause, a flaw that is considered in some studies (Kornstein et al., 2010; Usall et al., 2009). Furthermore, some studies rely on self-reported menopausal status, which is often inaccurate, as women may not recognise they are perimenopausal until well into the transition (Dennerstein et al., 2004). Since perimenopause can begin years before menstruation fully stops (Ismail et al., 2006), women experiencing depression, anxiety, and suicidal ideation may not attribute these symptoms to perimenopause, complicating research findings.

Menopause and Suicidality

To gain a clearer understanding of how suicidality is framed in menopause research, this section will explore studies that categorise all menopausal women together without distinguishing between perimenopause, menopause, and postmenopause. While this broad approach has limitations, it is necessary due to the lack of research in the area,

and it still provides valuable insights into the overall relationship with suicidality and menopause in general. By exploring suicidality across the entire menopausal transition, we can identify overarching patterns and risk factors that may inform future research and interventions, even as we acknowledge the need for more stage-specific distinctions.

Research investigating the relationship between menopause and suicidality consistently highlights an increased risk of suicidal thoughts and behaviours during this life stage, often independent of clinical depression (Pinto-Meza et al., 2006; Ryu et al., 2022). Large-scale cross-sectional and longitudinal studies across diverse populations have found elevated rates of suicidality among menopausal women with some research suggesting that the menopausal transition itself may be a predictor of suicidal ideation (Nakanishi et al., 2013). For instance, Sherr and colleagues (2016) reported that 57% of menopausal women in their UK-based study had experienced suicidal thoughts in the week prior to the study. In Qatar, similar findings were observed, as most Arab women in the study were aware of suicidality occurring during menopause (Murphy et al., 2013). Hunt and colleagues (1987) conducted a 10-year follow-up study of menopausal women attending HRT clinics and found that 11 out of 12 deaths in the cohort were due to suicide, suggesting that suicidality is not merely a transient symptom but may fatally persist and intensify for some women. Other studies have found suicidal thoughts to be prevalent in menopausal women, but only in those without depression (Won et al., 2016), suggesting that non-psychiatric factors linked to menopause itself may contribute to suicidality, and another found a nine percent increase in suicidality scores in menopausal women over a fifteen-year period (Kułak-Bejda et al., 2023).

Additionally, evidence also suggests that postmenopausal women may face an elevated risk of suicidal ideation and behaviours, as when women transition into this stage, they may continue to experience significant mental health challenges due to prolonged hormonal depletion, chronic health conditions, and accumulating psychosocial stressors (An et al., 2022). Moreover, Lee and colleagues (2016) reported that postmenopausal women who had been on HRT for over a decade had twice the risk of suicidal ideation compared to those who had never used HRT, highlighting the need for further research into the complex relationship between HRT and mental health outcomes in menopause.

Early Menopause and Primary Ovarian Insufficiency (POI)

Emerging evidence suggests that early menopause, defined as the onset of perimenopause between the ages of 40 and 44 (NICE, 2024), has been identified as a significant risk factor for suicidality during the menopausal transition, as research has found that women who experienced menopause before the age of 45 were 1.5 times more likely to report suicidal ideation compared to those who transitioned later (Moon et al., 2024). Despite limited research specifically linking early menopause to suicidality, existing studies indicate that early menopause is strongly associated with impaired mental health, particularly increased rates of depression and anxiety (Kundu & Acharya, 2023). Additionally, women experiencing early menopause report elevated perceived stress levels, a well-documented risk factor for suicidality across the female lifespan (Feskanich et al., 2022).

Primary ovarian insufficiency (POI), in which perimenopause begins before the age of 40 (NICE, 2024), appears to further heighten suicidality risk, as research has found that women with POI had a fourfold increased likelihood of suicidal ideation compared to those who had experienced menopause at a typical age (Ryu et al., 2022). This study also reported higher rates of impaired mental health and chronic illnesses such as diabetes, obesity, and hypertension among POI patients, findings that align with previous research highlighting the association between POI and increased physical health burdens (Deeks et al., 2011; Santoro, 2003; Xi et al., 2023). The presence of chronic illness further exacerbates suicidality risk, as chronic conditions contribute to psychological distress and reduced overall wellbeing (Gürhan et al., 2019). These findings suggest that abrupt E2 depletion, which occurs more suddenly in early menopause and POI (Faubion et al., 2015) may intensify cognitive, emotional, and hormonal dysregulation, thereby increasing suicide risk. This aligns with research on surgical menopause, where the abrupt cessation of ovarian hormone production has been linked to severe mood disturbances and suicidality, particularly among women with pre-existing vulnerabilities (Blackmore et al., 2008).

In addition to physical health challenges, POI carries significant psychological consequences. Women often receive the diagnosis unexpectedly, leading to shock, confusion, and a sense of loss, particularly when they have not yet completed or even started their reproductive plans (Singer, 2019). This abrupt confrontation with infertility and symptoms typically associated with middle age can distort self-concept and identity, reinforcing stigma and feelings of isolation (Golezar et al., 2020), as studies have documented increased rates of depression, anxiety, and reduced self-esteem among women with POI, often linked to the perceived loss of control over reproductive choices and accelerated aging (Faubion et al., 2015; Kingsberg, 2011). These emotional consequences may be compounded by poor clinical support and delayed diagnosis, with many women reporting inadequate psychological care (Singer, 2019). As a result, the early and socially discordant onset of menopause seen in POI can serve as a significant psychosocial stressor, potentially increasing suicidality risk in this population.

The Neuroscience of Menopause

The defining feature of menopause is the decline in ovarian hormone production, particularly in E2 and progesterone, as discussed earlier, which significantly impacts not only reproductive function and mood regulation, but also brain chemistry and stress responses (Mosconi et al., 2021); all of which play a role in increasing the risk of suicidality. E2, the primary form of oestrogen during the reproductive years, is crucial for maintaining brain function, cardiovascular health, and bone density (Liu et al., 2018; MohanKumar et al., 2018). Therefore, whenever E2 levels drop during menopause, these activities are compromised. Similarly, as ovulation terminates, progesterone levels also decline due to the cessation of corpus luteum activity: a temporary structure in the ovary responsible for producing the hormone (Henderson, 2019). Both E2 and progesterone influence the GABA system, the brain's primary inhibitory neurotransmitter network. Progesterone metabolites, such as allopregnanolone, positively interact with GABA-A receptors to produce calming and anxiolytic effects (Gilfarb & Leuner, 2002), so a decline in these hormones leads to reduced GABAergic activity, increasing anxiety, emotional reactivity, and sleep disturbances (Nolan et al., 2020; Rodríguez-Landa et al., 2020). Given that sleep disturbances and chronic insomnia are strong predictors of suicidality

(Lopez-Castroman & Jaussent, 2020), the decline in progesterone may further exacerbate mental health risks during menopause.

E2 plays a key role in regulating tryptophan hydroxylase, the enzyme responsible for serotonin synthesis; therefore, as E2 declines, serotonin availability is reduced, contributing to depressive symptoms, irritability, and emotional instability (Kulkarni, 2023). As serotonin deficiency (Halbreich & Kahn, 2001) and irritability (Jha et al., 2020) have been linked to suicidality, the menopausal decline in E2 may contribute to an increased risk of suicidality at this time. Furthermore, E2 also modulates dopamine, which is essential for reward processing, motivation, and emotional regulation (Yoest et al., 2016), therefore, as it declines, dopamine levels decrease, leading to anhedonia and a loss of motivation: core features of MDD (Soares & Zitek, 2008). These symptoms further build the risk of suicidality, particularly for women with pre-existing mood vulnerabilities.

Moreover, E2 plays a neuroprotective role in preserving hippocampal structure and function. Postmenopausal women have been found to experience hippocampal atrophy (Goto et al., 2011), which is associated with depressive symptoms, emotional dysregulation, and suicidality (Colle et al., 2015). Similarly, the amygdala, which regulates emotional responses, is influenced by E2 levels; therefore, reduced E2 may contribute to heightened stress sensitivity and emotional instability, both of which increase suicide risk (McEwan et al., 2016). The decline in E2 and progesterone is also associated with reduced neuroplasticity, impairments in memory, attention, and executive functioning (Ali et al., 2018). This type of cognitive decline has been linked to increased suicidality, particularly in older women who may experience feelings of helplessness and loss of autonomy (An et al., 2022). Also, postmenopausal women often exhibit increased cortisol reactivity, reflecting an altered hypothalamic-pituitary-adrenal (HPA) axis response (Kudielka et al., 1999), and elevated cortisol levels are linked to mood disorders, impaired cognitive function, and hippocampal atrophy (Goto et al., 2011).

While E2 and progesterone levels decline significantly during menopause, androgens such as testosterone and dehydroepiandrosterone (DHEA) decline at a much slower rate (Kim et al., 2017). This leads to a higher androgen-to-oestrogen ratio postmenopause as

there is a relative androgen excess, which is associated with a range of metabolic and neuropsychological effects that may contribute to increased mental health risks. One major consequence of this is the accumulation of visceral fat, which is strongly associated with metabolic syndrome, insulin resistance, and chronic inflammation (Tchernof & Després, 2013). As E2 levels decline, body fat distribution shifts from a gynoid pattern (i.e. around the hips and thighs) to an android pattern (i.e. around the abdomen), partially due to the reduced oestrogen-to-androgen ratio (Lizcano & Guzmán, 2014). This redistribution of fat can have psychological repercussions, as research indicates that weight gain and changes in body shape contribute to body dissatisfaction, diminished self-esteem, and increased depressive symptoms in menopausal women (Schreiber & Dautovich, 2017). Given that body dissatisfaction is a risk factor for depression and suicidality (Forbes et al., 2022; Gojdz et al., 2013), the hormonal changes driving visceral fat accumulation may heighten mental health vulnerabilities during menopause. However, it is important to recognise that these mental health vulnerabilities are not solely a result of physical changes but are deeply influenced by negative societal attitudes toward female aging, and that the interaction of these external pressures and biological changes during menopause can create distress (Severne, 1979).

Additionally, insulin resistance becomes more prevalent in postmenopausal women due to declining E2 levels (Carr, 2003), and it has been directly linked to cognitive dysfunction and mood disturbances (Martin et al., 2021). Insulin plays a vital role in brain metabolism by regulating synaptic plasticity and neurotransmitter function, including serotonin and dopamine pathways, therefore, insulin resistance may exacerbate existing neurotransmitter imbalances caused by menopausal hormonal decline, possibly further contributing to emotional dysfunction, depressive symptoms, and suicidality (Kullman et al., 2016).

Cognitive difficulties also emerge as a concern in postmenopause, with studies linking the altered oestrogen-to-androgen ratio to impairments in memory, executive functioning, and processing speed (Bojar et al., 2016). This may be due to E2 playing a neuroprotective role as it enhances brain-derived neurotrophic factor (BDNF) expression, which is essential for synaptic plasticity, neuronal survival, and mood regulation (Song et al., 2022). As BDNF levels decline postmenopause, cognitive deterioration may

accelerate, leading to frustration, diminished autonomy, and increased feelings of hopelessness; factors that are strongly associated with suicidal ideation (An et al., 2022). Furthermore, cognitive impairment in postmenopause has been linked to heightened stress sensitivity and emotional instability, likely due to hormonal influences on the prefrontal cortex and amygdala (Mosconi et al., 2021), possibly abetting suicidality.

Hormonal Changes and Physical Pain

Pain is a significant but overlooked factor in suicidality during menopause. While midlife pain can stem from various sources – including general aging and comorbid health conditions – its biological roots in menopause are primarily hormonal (Strand et al., 2024). Oestrogen plays a crucial role in modulating pain perception through its interactions with the CNS, including the serotonergic, opioid, and endocannabinoid systems (Craft, 2007), therefore, as E2 levels decline during peri- and postmenopause, women experience heightened pain sensitivity and an increased prevalence of chronic pain conditions such as musculoskeletal pain, osteoarthritis, fibromyalgia, and migraines (Fillingham et al., 2009). This biological shift may exacerbate physical discomfort and contribute to psychological distress, sleep disturbances, and reduced overall quality of life (Borozan et al., 2024), as poor sleep alone lowers pain tolerance and amplifies emotional distress (Staffe et al., 2019).

Oestrogen depletion alters pain perception through several interconnected mechanisms, disrupting key neurotransmitter systems and inflammatory processes that regulate nociception (i.e. the procedure in which the nervous system detects and responds to harmful stimuli). The decline of E2 is linked to reduced serotonin levels and impaired opioid receptor function, weakening the body's natural pain inhibition and heightening sensitivity to pain stimuli (Paredes et al., 2019). Additionally, oestrogen modulates nociceptive receptors, including transient receptor potential vanilloid 1 (TRPV1) and P2X purinoceptor 3 (P2X3), both of which become more active as oestrogen levels drop, leading to increased pain perception (Seol & Chung, 2022). The inflammatory response is also significantly affected by oestrogen depletion, as lower oestrogen levels contribute to an upregulation of pro-inflammatory cytokines, which exacerbate chronic

pain conditions by prolonging pain signalling in the CNS, increasing the likelihood of persistent pain syndromes (Fenton & Panay, 2016). Furthermore, as oestrogen plays a vital role in sleep regulation, its decline is therefore associated with an increased prevalence of sleep disturbances.

The interplay between hormonal changes and pain perception underscores the necessity of understanding pain as both a symptom of menopause and a potential driver of suicidality. Research suggests that menopausal pain may be more resistant to conventional treatment strategies, as standard analgesics such as non-steroidal anti-inflammatory drugs (NSAIDs) and opioids may be less effective in women experiencing oestrogen depletion (Henry et al., 2014). Additionally, the chronic and debilitating nature of pain can lead to feelings of hopelessness, helplessness, and emotional exhaustion, which are key psychological precursors to suicidal ideation (Campbell et al., 2015). The activation of neuroinflammatory pathways in response to oestrogen loss may further contribute to the persistence of pain and increased vulnerability to mood disorders, particularly depression and anxiety (Xu et al., 2016), which are strongly linked to suicidality (Serafini et al., 2016). As women are already at an increased risk of developing mood disorders during the menopausal transition due to hormonal fluctuations (Kulkarni, 2018), the added burden of chronic pain may act as a compounding risk factor, amplifying the risk of suicidality during this time.

Research indicates that women experiencing menopause symptoms have nearly twice the odds of developing chronic pain, which is strongly associated with increased risk of more severe symptoms of depression (Weiss et al., 2016), and other mental health disorders (Gibson et al., 2019). Chronic pain, particularly when severe or persistent, exacerbates psychological distress, sleep disturbances, and emotional exhaustion, all of which heighten vulnerability to suicidality (Racine, 2018). Studies also show that postmenopausal women report significantly higher pain levels and poorer mental health compared to premenopausal women, reinforcing the link between pain intensity and worsening mental wellbeing (Sadriwala & Rastogi, 2021). Despite this, gender bias in medical care remains a pervasive barrier as women's pain is often underestimated or dismissed by healthcare professionals due to stereotypes that they are more likely to exaggerate or dramatise symptoms (Gask, 2024; Lam, 2024; Paganini et al., 2023; Zhang

et al., 2021). As a result, many women report receiving less effective pain management or being directed toward psychotherapy rather than medical treatment (Moretti et al., 2023), which can intensify feelings of confusion and hopelessness, particularly when menopause-related pain is already poorly understood and under-treated. In some cases, women may resort to self-medicating with alcohol or other substances to cope with both physical and emotional pain, a behaviour linked to increased suicide risk (Jangal et al., 2021; Zhang et al., 2005).

The strong correlation between menopausal symptoms, including persistent pain, and elevated anxiety and depression scores suggests the need for routine psychological screening in women experiencing menopause-related pain. However, despite this, menopause-related depression remains underrecognised and underdiagnosed (Kulkarni et al., 2024).

Beyond Hormonal Changes – Other Midlife Factors

While hormonal fluctuations and chronic pain are key contributors to suicidality during menopause, a range of non-hormonal factors also heighten mental health vulnerabilities during this transition, such as comorbid psychiatric conditions, having a psychiatric history and major life transitions. Additionally, grief related to reproductive aging – encompassing the loss of fertility and changing perceptions of womanhood – can further compound distress, particularly in societies that place high value on youth and reproductive capability as central to female identity (Ballard et al., 2001). This distress can be magnified by broader societal attitudes toward aging, which often marginalise older women and contribute to feelings of diminished self-worth. Each of these factors can compound the challenges of menopause, heightening vulnerability to suicidality during the transition.

Comorbid and Previous Mental Health Conditions. One of the strongest predictors of suicidality in menopausal women is a history of pre-existing mental health conditions, as research suggests that women with diagnoses of depression (Behrman & Crockett, 2023), anxiety (Bromberger et al., 2014) or BD (Perich et al., 2021) are at a

heightened risk of experiencing severe distress during menopause, including suicidality (Weiss et al., 2016), with perimenopausal women particularly susceptible (An et al., 2022). Additionally, studies have found that women with a history of MDD who transition into menopause are significantly more likely to relapse compared to those who remain premenopausal (Chen et al., 2017), which suggests that sometimes menopause does not create mental health disorders in isolation but rather interacts with pre-existing susceptibilities. For individuals with BD, menopause can be particularly destabilising, as studies suggest that women with BD experience a greater proportion of depressive episodes during menopause compared to men of the same age group, reporting fewer euthymic or 'normal' periods (Kim et al., 2020; Marsh et al., 2009). Consequently, this mood instability increases the risk of suicide attempts, as depressive episodes are a primary driver of suicidality in BD (Bourin, 2024). Additionally, a longitudinal study found that menopausal women with MDD were more likely to be diagnosed with BD later in life (Chen et al., 2017), which suggests that menopause not only exacerbates BD symptoms but may also contribute to the late-onset conversion from major depression to BD.

Emerging research also suggests that neurodivergent women, particularly those with autism spectrum disorders (ASDs) may experience menopause with heightened psychological distress. Menopause has been shown to amplify ASD-related challenges such as sensory sensitivities, emotional dysregulation, and social fatigue, while simultaneously eroding long-standing coping strategies typical for women, such as masking (Moseley et al., 2020). These experiences have been linked to increased social withdrawal, functional decline, and suicidal thoughts, often compounded by a lack of clinician awareness and neurodiversity-affirming support (Yau et al., 2023). Although neurodevelopmental conditions are not mental illnesses, they frequently co-occur with psychiatric diagnoses and may represent a further source of vulnerability that is currently under-recognised in menopause research and clinical care.

The notion that menopause alone is responsible for suicidality in midlife women is increasingly challenged by research, as it suggests that the transition may amplify pre-existing psychiatric vulnerabilities rather than acting as an independent trigger. Another study found that while comorbid mood and anxiety disorders were associated with increased suicidal ideation in both premenopausal and postmenopausal women, they

did not have the same effect during perimenopause (Usall et al., 2009), which suggests that suicidality may be influenced by distinct factors beyond pre-existing psychiatric conditions unique to that individual stage. However, some studies have found an increase of suicidality during menopause even after adjusting for prior suicidality and history of depression (Nakanishi et al., 2013), suggesting that, in some cases, menopause itself may act as an independent risk factor for suicidality. Regardless of causation, there is a well-established link between pre-existing and comorbid psychiatric conditions, menopause, and increased suicide risk, therefore, there is a pressing need for proactive screening and early intervention strategies to combat this.

Major Life Events. Beyond clinical factors, the menopausal transition often coincides with a period of significant life changes, many of which can serve as stressors that heighten mental health vulnerabilities and increase suicidality in midlife women. These include marital disruptions (e.g. divorce, separation or widowhood), career instability, financial difficulties, the transition to an 'empty nest', increased caregiving responsibilities (e.g. of elderly parents) and health-related problems (Milton et al., 2020). While some women can navigate these transitions without significant distress, others experience profound psychological strain, particularly when lacking strong social support or coping resources (Wenzel et al., 2024). The cumulative burden of these stressors can elevate the risk of suicidality during the menopausal transition, making it important to examine the psychological factors that intersect with biological changes happening at this time.

Marital Disruptions and Relationship Strains. The midlife period often brings shifts in relationship dynamics, with longstanding marital tensions becoming more pronounced, sometimes leading to separation or divorce. These changes in intimate relationships – particularly divorce and widowhood – are strongly associated with increased depression and suicidality in midlife women (Heikkinen et al., 1995), with research indicating that menopausal women who are divorced, widowed, or in strained relationships are at higher risk of depression and suicidal ideation compared to their

married counterparts (Séguin et al., 2021; Zulkarnain & Korenman, 2018). In addition to these relational stressors, menopause itself can introduce sexual and emotional challenges that further strain partnerships, as loss of libido is a common symptom during the menopausal transition and can be driven by hormonal changes, such as declines in oestrogen and testosterone, as well as vaginal dryness and reduced orgasmic response (Graziottin, 2000; Alexander et al., 2006). These physiological changes are often accompanied by mood disturbances, anxiety, body image concerns, and fatigue; factors that diminish sexual desire and may create distance in intimate relationships (Channon & Ballinger, 1986; Thomas et al., 2019). For some women, the loss of sexual connection during menopause can exacerbate emotional disconnection or catalyse relationship breakdowns, particularly in the absence of communication or medical support. Yet, despite the distress this causes, many women do not seek help, either due to stigma or the perception that libido loss is an unavoidable part of aging (Cumming et al., 2009). The psychological toll of marital disruptions during menopause is also often compounded by financial insecurity, social isolation from a disruption of social networks, and the loss of long-term companionship. Unlike men, who are more likely to remarry (Carr, 2015), women can be left to navigate the transition more independently; however, children can be a mitigating factor in this by providing emotional support and continuity of purpose following relationship loss (Heikkinen et al., 1995).

In contrast, women in stable relationships tend to exhibit greater resilience against menopause-related mood disturbances, suggesting that marital stability and social support serve as protective factors in mental health outcomes during the transition (Kutob et al., 2017). Having a supportive partner may help regulate stress, encourage healthy coping strategies, and provide emotional validation, however, research has also found that divorced or separated menopausal women demonstrated reductions in blood pressure, increases in physical activity and weight loss compared to their married counterparts (Kutob et al., 2017), therefore the impact of continuing or ending a marriage on mental health is complex and may be influenced by the quality of the relationship. Additionally, some studies suggest that mood and stress factors are better predictors of psychological outcomes during the transition than menopausal status itself (Guérin et al., 2017), suggesting that psychosocial factors such as relationship dissatisfaction,

rather than hormonal changes alone, play a crucial role in menopausal mood disturbances. This perspective challenges the traditional medical model, which attributes menopause-related mental health challenges solely to oestrogen depletion, rather than considering the broader psychosocial landscape in which menopause occurs.

Career Changes, Job Loss, and Financial Stress. For many women, the period of menopause coincides with career disruptions and financial strain, which can be significant sources of distress. Unemployment, workplace discrimination, and forced retirement can contribute to a loss of identity and purpose, leading to feelings of worthlessness and depression (Orts Llopis, 2024). Research indicates that unemployed midlife women are over three times more likely to die by suicide than their employed counterparts; an effect that has been found in midlife (Heikkinen et al., 1995), and across the female lifespan (Kposowa, 2001). Ageism and gender discrimination in the workplace further exacerbate these difficulties, as many menopausal women report being overlooked for promotions, excluded from decision-making, or pressured into early retirement, which contributes to financial instability and mental health struggles (Jyrkinen, 2014), increasing the likelihood of depression and suicidality. Despite being a growing demographic in the workforce (Sheen, 2017), midlife and older women frequently encounter systemic discrimination that limits their professional potential and overall wellbeing. Unlike men, women experience age discrimination earlier in their careers, particularly after their reproductive years, when they are often perceived as less ambitious, less competent, and less valuable to organisations (Tahmaseb-McConatha et al., 2023). While older men may be perceived as wise or authoritative, older women are often seen as past their professional prime, leading to more negative career consequences, such as feeling pressured to accept early retirement packages to make room for younger employees (Sigurðardóttir & Snorradóttir, 2020). Additionally, those who attempt to re-enter the workforce may face significant hiring discrimination, causing severe financial consequences, with many women struggling to build sufficient retirement savings due to interrupted careers (Handy & Davy, 2007).

Menopause remains a largely taboo topic in professional settings, further marginalising menopausal employees. Workplace structures fail to accommodate menopause-related challenges, leading many women to go without support daily. A recent report by the Chartered Institute of Personnel and Development (CIPD; 2023) showed that in the UK, only one-third of menopausal workers feel supported by their manager or employer, with around one in six of these workers considering leaving their job as a direct result of this. The report also found that only 24% of female employees aged between 40 and 60 reported that their employer had a menopause policy or other support measures in place (CIPD, 2023). A 2021 European Menopause and Andropause Society (EMAS) position statement stressed that menopausal symptoms can negatively affect performance, motivation, and workplace engagement, but this was not due to incompetence, but because of workplace cultures that fail to provide support or accommodations (Rees et al., 2021). Consequently, around one in ten women aged between 40 and 55 have left their jobs due to their menopause symptoms (Bazeley et al., 2022). Despite increased public discussion about menopause-friendly policies, critics argue that the workplace response has been largely performative, as few have provided specific and concrete structural changes (Riach & Jack, 2021). As a result, many initiatives fail to create meaningful changes, leaving menopausal women to choose between working in a precarious employment situation or be unemployed (Westwood, 2024).

Workplace age bias significantly affects the mental health of midlife and older women, reinforcing feelings of invisibility, diminished self-worth, and career stagnation (Saadati, 2024). Research indicates that women facing age-related discrimination experience heightened psychological distress, as workplace exclusion undermines their professional identity and sense of agency (Yuan, 2007). Additionally, job insecurity and limited opportunities for career advancement further intensify stress, particularly for women over 60, who are disproportionately affected by workplace marginalisation (Roscigno et al., 2022). Furthermore, the financial consequences of age discrimination in the workplace directly impact mental health and suicidality among midlife and older women, as research shows financial hardship increases the odds of suicidal ideation in women aged over 50 (Choi et al., 2021). Employment instability and financial strain act as key mediators in the relationship between workplace ageism and deteriorating mental

wellbeing, as women who experience age discrimination often report increased financial insecurity, which in turn leads to heightened depressive symptoms, anxiety, and lower life satisfaction (Shippee et al., 2019). This economic vulnerability, coupled with the emotional toll of workplace exclusion, can leave many menopausal women feeling devalued and directionless, exacerbating mental health challenges.

Empty Nest Syndrome and Social Isolation. The transition to an 'empty nest'. in which children leave home as adults, can be a significant emotional stressor, particularly for women whose identities have been deeply tied to their caregiving roles (Bagheri et al., 2024). It often coincides with the time of menopause, as many women have children in their late twenties or early thirties (Delbaere et al., 2021), meaning their children reach adulthood around the time they themselves are undergoing menopausal changes. The shift represents not only a change in daily routines but also a profound psychological adjustment, as women who have spent years prioritising their children's needs may struggle to redefine their sense of purpose and self-worth (Darmayanthi & Lestari, 2018). Research indicates that women who find it difficult to adapt to this transition are at an increased risk of experiencing loneliness and depression, which are established risk factors for suicidality (Wang et al., 2017), particularly when combined with other midlife stressors such as menopause, marital strain, or workplace challenges (Bougea et al., 2020). A cross-sectional study in China found that empty nesters had significantly higher levels of loneliness and depressive symptoms compared to those whose children still lived at home (Zhai et al., 2015), however the study did not differentiate between parental gender. Furthermore, a case study by Shakya (2014) examined a young woman who engaged in NSSI and experienced suicidal ideation as a result of loneliness after her parents moved away, which suggests that similar mechanisms could apply to older women facing loneliness during the empty nest transition, potentially increasing their risk of suicidality.

The emotional distress associated with the empty nest phase is often exacerbated by a perceived loss of meaning reduced social interaction, and changes in family dynamics, which can contribute to feelings of isolation and grief (Bougea et al., 2020). In some cases, this period coincides with other major life transitions, such as aging parents

requiring care or the onset of health concerns, further compounding emotional burdens (Bagheri et al., 2024). While some women embrace the newfound freedom of an empty nest and engage in personal growth (Darmayanthi & Lestari, 2018), others experience heightened emotional distress and a deep sense of purposelessness, particularly if they lack strong social support or alternative sources of fulfilment (Chen et al., 2012). Additionally, cultural and societal expectations about motherhood can influence how women perceive and navigate this transition, because in cultures where maternal identity is highly valued and prioritised, the departure of children from the home may be experienced as a bigger loss, reinforcing feelings of redundancy and declining self-worth (Mitchell & Lovegreen, 2009).

While the emotional distress of empty nest syndrome is well-documented, some researchers argue that not all women experience this transition negatively. A longitudinal study from the German Aging Society suggested that the mental health effects of an empty nest have been overstated, as many women report neutral or even positive adjustments when their children leave home (Kristensen et al., 2021), which suggests that individual differences, coping strategies, and social support networks play a crucial role in determining how well women navigate this transition. Moreover, it is important to consider underlying mental health conditions and pre-existing vulnerabilities rather than attributing causality solely to the departure of children. Some researchers caution against pathologising a natural life transition, instead advocating for a more nuanced understanding that considers cultural, economic, and relational factors (Bougea et al., 2020). Regardless, it remains important to consider the empty nest transition as a potential contributor to suicidality in midlife women, particularly when compounded by other stressors occurring simultaneously.

Increased Caregiving Responsibilities. As children leave home and the demands of direct parenting decrease, many midlife women find themselves taking on new caregiving roles, such as aging parents, spouses with health conditions, and, in some cases, grandchildren. Known as the ‘sandwich generation’ (Miller, 1981), women in midlife specifically are disproportionately burdened by caregiving duties, balancing the emotional, physical, and financial strain of supporting both older and younger family

members (Li, 2024). While caregiving can be a fulfilling and meaningful role, the cumulative stress associated with these responsibilities has been linked to increased risks of depression in women (Caputo et al., 2016), with social status and financial factors exacerbating their vulnerabilities (Chiao & Chen, 2018). In many cultures, the emotional toll of caregiving is often exacerbated by societal expectations that frame women as the natural primary caregivers, reinforcing the idea that self-sacrifice is an inherent part of womanhood, which can lead to burnout, chronic stress, exhaustion, and a diminished sense of personal autonomy, particularly when caregiving responsibilities are overwhelming or unsupported (Mathis, 2021; Proudfoot & Kay, 2023). Caregiving responsibilities also often disrupt marital dynamics, particularly when one partner takes on a disproportionate caregiving burden, as women tend to do (Mathis, 2021). Research suggests that midlife women providing care for both aging parents report higher levels of marital dissatisfaction, as caregiving stress spills over into their intimate relationships (Ward & Spitze, 1998). This, as discussed earlier, puts women at a higher risk of developing depressive symptoms and experiencing suicidal ideation (Séguin et al., 2021; Zulkarnain & Korenman, 2018). Furthermore, the financial strain of caregiving for women – whether due to reduced work hours, career sacrifices, or increased medical expenses – adds another layer of vulnerability, compounding the risk of mental health deterioration (Schwartz et al., 2020).

However, some scholars argue that the framing of caregiving as an overwhelming burden for women is reductive and overlooks its potential positive aspects, as studies suggest that it can provide emotional fulfilment, strengthen family relationships, and offer a sense of purpose, particularly for women who have strong social networks and access to support services (Shirai et al., 2009). However, the key determinant of whether caregiving is perceived as rewarding or detrimental is the level of available social, financial, and institutional support. Despite growing awareness of the sandwich generation's struggles, government policies and workplace accommodations remain inadequate, especially for women, as policies such as unpaid leave and flexible work arrangements fail to cater to them, with workplaces continuing to be structured around an 'ideal' male worker (Charlesworth & Macdonald, 2017). Workplaces often offer benefits in ways that still disadvantage women, such as limited paid leave periods or unpredictable work

schedules, therefore more women are taking part-time jobs, reducing working hours or stopping working altogether due to caregiving (Greenfield et al., 2018; Lyonette, 2015). Interestingly, a study found that when women seek work flexibility often experience lower earnings and fewer career advancement opportunities, whereas men who negotiate flexible work arrangements tend to receive higher wages (Winder, 2009).

As caregiving responsibilities intensity during midlife, the physical and emotional toll on women can have significant long-term health implications. The cumulative stress associated with caregiving, combined with hormonal changes and other life stressors during menopause, can increase vulnerability to a range of physical health-related conditions.

Informal Carers of People Experiencing Menopausal Suicidality. Caregiving demands are not only experienced by menopausal women but also by the people who support them, especially when mental health is at stake. While existing literature has largely focused on the individual experiences of menopausal women, little research has examined the emotional impact on those who care for them. Family members, friends, and menopause-focused healthcare professionals (HCPs) often serve as informal carers, offering vital emotional and practical support, yet, when these carers are faced with severe psychological distress or suicidality in the women they support, they themselves are at risk of burnout and psychological harm (Marshall et al., 2023; Rytterström et al., 2020). Many carers report guilt, shame, and helplessness in the face of suicidality (Juel et al., 2020), with 49% experiencing depression and 36% having thoughts of self-harm or suicide (Carers UK, 2023). Despite their vital role, carers are often excluded from qualitative research, largely due to the time-intensive nature of such methods (Runacres & Herron, 2023), which means that their perspectives are rarely integrated into service design or support strategies. This omission undermines both their wellbeing and the care they are able to provide to those they are supporting. Research has shown that qualitative approaches are particularly effective at uncovering the lived experience of carers (McCabe et al., 2016), yet carer-related research remains fragmented (Larkin et al., 2018), and existing interventions rarely reflect their nuanced needs (Corry et al., 2015). Even general practitioners (GPs), who often serve as a first

point of contact for distressed women, report feeling unprepared to assess or respond to suicidality (Coppens et al., 2018; Palmieri et al., 2008; Saini et al., 2016). However, previous research has not explored the experiences of caregivers supporting women facing severe mental health issues, including suicidality, specifically during menopause.

Understanding the experiences of carers, especially in relation to menopausal mental health crises, is therefore essential. Not only does reduced caregiver stress improve carer wellbeing, but it has been linked to lower mortality rates in the people they support (Schulz & Beach, 1999; Kuzuya et al., 2011). Given the economic value of unpaid care – estimated at £162 billion in England and Wales (The University of Sheffield, 2023) – the need to develop evidence-informed support systems is both a public health and policy imperative.

Physical Health Conditions. Beyond the effects of menopause on mood and mental wellbeing, midlife is also marked by an increased risk of developing chronic health conditions such as cardiovascular disease (CVD), osteoporosis, diabetes, and musculoskeletal disorders (Karkhanis & Mathur, 2016), which can have an effect on mental health, quality of life, and suicidality among midlife women. Studies indicate that women in peri- and postmenopause experience higher levels of physical distress compared to their premenopausal counterparts, with a strong correlation between pain and psychological distress, as the persistent physical discomfort contributes to depression, anxiety, and suicide risk (Kim et al., 2020). Additionally, a lack of effective pain management strategies for menopausal women further exacerbates these issues, as this can lead to hopelessness, sleep disturbances, and fatigue, all of which contribute to emotional exhaustion (Stålnacke, 2012). As previously mentioned, traditional pain relief methods such as NSAIDS or opioids are often less effective for menopausal women (Henry et al., 2014), therefore, many menopausal women may experience emotional exhaustion alongside persistent pain, further exacerbating their distress.

Menopause is also associated with a heightened risk of CVD due to declining oestrogen levels, increased cholesterol levels, and metabolic changes (Czyżyk & Stevenson, 2019). Beyond the physical risks, CVD has a strong bidirectional relationship with depression,

and research has shown that women with heart disease have significantly higher rates of anxiety and suicidality compared to men (Daray et al., 2019; Wium-Andersen et al., 2020). The fear of a heart attack, reduced physical capacity, and medication side effects contribute to feelings of helplessness and emotional distress in menopausal women, with CVD-related disability often disrupting daily activities, impacting financial stability, and social engagement, exacerbating mental health decline (Chaves et al., 2021). Despite these risks, cardiovascular interventions often fail to incorporate mental health support, leaving women without adequate physiological resources to cope with the emotional impact of the condition (Parry et al., 2022), creating further turmoil.

Additionally, osteoporosis is common in postmenopausal women, as declining oestrogen levels reduce bone density and increase fracture risk (Cheng et al., 2022). This condition is not just a physical health issue, but also has psychological implications, including depression, anxiety, and suicidality, as women with osteoporosis often experience chronic pain, mobility limitations, and social isolation, all of which contribute to higher rates of depression and anxiety (Feki et al., 2024; Martino et al., 2023). Fractures, particularly in the hip and spine, can lead to loss of independence, reliance on caregivers, and financial strain, further worsening mental health outcomes (Khalaf et al., 2017; Shyu et al., 2012). Furthermore, osteoporosis can impact self-perception and body image, as physical changes like height reduction and posture alterations can contribute to low self-esteem and social withdrawal (Kelly et al., 2019; Pałucka et al., 2024), with studies suggesting that postmenopausal women with osteoporosis report significantly lower sexual satisfaction and increased depressive symptoms, reinforcing the emotional toll of the condition (Kazemi et al., 2010).

Diabetes presents another health challenge for menopausal women, with metabolic shifts leading to an increased risk of developing type 2 diabetes, specifically in those experiencing early menopause (Anagnostis et al., 2019). Research suggests that diabetes and depression share a bidirectional relationship, where individuals with diabetes are more likely to develop depression, and those with pre-existing depression are at increased risk of developing diabetes due to stress-related metabolic dysregulation (Sherr, 2022). Furthermore, a meta-analysis of 44 studies found that individuals with diabetes had up to four times higher risk of suicide death compared to the general

population (Sherr, 2022). This can be heightened in women experiencing social stressors with poor glycaemic control or diabetes-related complications, as they are at an even greater risk of developing suicidal ideation and self-harm behaviours (Chung et al., 2014).

The psychological impact of developing a chronic illness during menopause extends beyond the immediate physical symptoms, often compounding existing stressors and exacerbating mental health vulnerabilities. Many women struggle with the loss of control over their bodies, as the cumulative effects of conditions such as CVD, osteoporosis, diabetes, and chronic pain disorders reinforce feelings of frailty, unpredictability, and decline, which can lead to heightened existential anxiety about mortality, particularly when these conditions disrupt daily life, limit dependence, or require long-term management strategies (García-Vigara et al., 2024; Ruan et al., 2020; Wang et al., 2023). Additionally, the financial burden of chronic illness, including possible medical expenses, treatment costs, and potential job instability due to health-related work disruptions, further contribute to economic insecurity, a well-documented stressor linked to depression and suicidality (Kim et al., 2024). For many women, chronic illness exacerbates social withdrawal, particularly when mobility restrictions, fatigue, or disability hinder participation in social and recreational activities, which, in turn, causes loneliness and isolation: key drivers of suicidality (Warner et al., 2019). Moreover, sleep disturbances – which are already common during menopause due to hormonal fluctuations – are further disrupted by chronic pain, metabolic imbalances, and psychological distress (Owusu et al., 2019; Susana et al., 2018), intensifying emotional exhaustion and reducing resilience against suicidal thoughts. However, while it is essential to recognise the physical challenges associated with menopause, framing it primarily as a disability, as proposed by recent Equality and Human Rights Commission (2024) guidance, risks reinforcing stigma and ageism already experienced by menopausal women (The Lancet, 2024).

Societal Attitudes Towards Aging and Experiencing Grief. The menopausal transition extends beyond biological changes, encompassing profound social and psychological dimensions which can be influenced by cultural narratives surrounding aging and femininity. In many societies, a woman's value has long been intertwined with

youth, beauty, and reproductive capacity, meaning that menopause can be perceived as a marker of decline rather than a natural life stage, which can lead to higher rates of suicidality in menopausal women (Murphy et al., 2013). Alongside broader societal ageism, women may also experience grief related to reproductive aging, facing the emotional impact of losing fertility and changing perceptions of their roles in society and within their personal lives. For some, this loss can be particularly intense, especially in cultures where motherhood is highly valued or for women who had desired children but were unable to conceive (Fieldsend & Smith, 2020). This often-overlooked form of grief can contribute to emotional distress, depression, and even suicidality, particularly when compounded by societal pressures that equate female worth with reproductive capability.

The Psychological Consequences of Societal Attitudes Toward Aging Women.

The stigma surrounding aging in women is deeply rooted in societal biases, often perpetuating the unfounded perception that older women are less competent, less attractive, and less socially valuable than men of the same age (Hatch, 2005). This gendered ageism manifests in various ways, from age discrimination in the workplace to reduced representation of older women in media and public life, further reinforcing societal perceptions that equate female worth with youth and aesthetic appearance (McGann et al., 2016; Milivojević et al., 2021). Studies show that negative attitudes toward one's own aging are significantly associated with higher levels of depression and lower resilience (Thorpe et al., 2014), reinforcing the mental health burden of menopause (Kavirajan et al., 2011). In cultures where youth and fertility are highly valued, menopause can be perceived as a decline in both physical attractiveness and social worth, reinforcing negative self-perceptions and exacerbating feelings of invisibility and diminished purpose (Navvabi-Rigi et al., 2022). In these cultures, menopause can also be framed as a medical issue requiring treatment rather than a natural developmental change experienced by all women; a perspective that can exacerbate feelings of depression during this stage of life as it reinforces fears of aging and bodily deterioration (Jassim & Al-Shboul, 2008).

Conversely, some cultural perspectives embrace aging as a transition into wisdom and social authority, providing a protective effect on psychological wellbeing (Hammoudeh et al., 2018). Research suggests that women who adopt a more positive view of aging (i.e. seeing it as a time of personal growth and renewed purpose) are less likely to develop depression and anxiety during menopause (Bryant et al., 2012). However, this resilience is largely shaped by societal messages (e.g. conveyed through media, cultural narratives, and workplace dynamics), social support networks, and personal coping mechanisms (Denche-Zamorano et al., 2024).

Grief Related to Reproductive Aging. For many women, the end of reproductive ability brings a nuanced and deeply personal form of grief, even for those who have completed their families or for those who never intended to have children (Singer & Hunter, 1997). Unlike traditional bereavement, which is widely recognised and socially validated, this type of loss is often overlooked or dismissed, leaving women without the necessary space to process or express their emotions, which can contribute to prolonged grief reactions and increased psychological distress (Grauerholz et al., 2021). Studies indicate that women who particularly strongly identify with motherhood may struggle more with a sense of purposelessness after menopause (Jassim & Al-Shboul, 2008), which may heighten their vulnerability to depression and suicidality. Beyond identity struggles, the loss of reproductive potential can also provoke existential anxiety, as menopause serves as an unavoidable milestone that brings attention to the passage of time and one's own mortality. Menopause often signifies the end of a life stage that some women may believe was defined by possible potential, whether for pregnancy, youth, or a culturally validated form of femininity (Rodríguez-Landa et al., 2015). The transition can provoke deep-seated fears about aging, illness, and mortality, particularly in women who have internalised societal narratives that equate aging with decline rather than transformation (Holmes, 2019). The shift away from reproductive capability can lead to feelings of loss and identity uncertainty, primarily in cultures that place high value on physical appearance and fertility as central aspects of womanhood, causing psychological distress and reinforcing feelings of redundancy, social invisibility, and exclusion (Navvabi-Rigi et al., 2022).

The existential distress associated with menopause is often more pronounced in individualistic societies that prioritise autonomy, productivity, and youth. While some cultures honour older women as wisdom-holders or matriarchal figures, Western societies frequently lack positive post-reproductive role models, reinforcing anxieties about personal relevance (Bould & Lock, 1994). Additionally, women without strong social support or meaningful roles in their work or communities may be particularly vulnerable to a sense of purposelessness, which research has linked to increased rates of depression and suicidality in postmenopausal women (An et al., 2022).

Women who experience early menopause or POI may be even more vulnerable, as they experience this transition at a time when most of their peers still remain fertile. Studies show that premature menopause is associated with a significantly higher risk of depression and suicidal ideation, as the unexpected nature of this transition can lead to feelings of being 'robbed' of an expected life stage (Ryu et al., 2022; Tian et al., 2024), depriving them of the ability to prepare psychologically, or practically. Unlike natural menopause, which is gradual and socially normalised, early menopause or POI disrupts expectations of biological aging contributing to heightened distress and grief (Rani et al., 2022). This sense of loss, combined with broader societal ageism, can leave women feeling increasingly marginalised and may deteriorate their mental health.

Assessment of Menopausal Depression in Clinical Practice

Depression during menopause is a significant mental health issue that may contribute to increased suicide risk among women; however, despite its severity and potential consequences, it remains frequently underdiagnosed and often overlooked in both clinical and research settings (Kulkarni et al., 2024). Diagnosing menopausal depression may be challenging due to the complex interplay of hormonal fluctuations, psychosocial stressors, and the overlapping symptoms of menopause and mood disorders. Unlike MDD, which follows well-established diagnostic criteria, menopausal depression presents with a unique symptom profile that may not always align with traditional psychiatric frameworks. This can lead to misdiagnosis or misattribution, often resulting in the prescription of antidepressants rather than HRT, leaving many women vulnerable

to worsening mental health outcomes, including suicidality (Kulkarni, 2018). An overview of symptoms differences between perimenopausal and clinical depression can be seen in Table 2.

Table 2. Comparison of Perimenopausal and Typical Depression Symptom Profiles.

Data Source: Kulkarni (2018).

Symptom Category	**Perimenopausal Depression**	**Clinical Depression**
Mood	Sudden, fluctuating mood changes; mood instability often triggered by hormonal shifts.	Persistent low mood over time, not typically hormone related.
Anxiety	Prominent, often co-occurs with depression; includes irritability, panic, and tension.	May be present, but not always a dominant feature.
Sleep	Insomnia, especially early morning waking and sleep fragmentation.	Insomnia or hypersomnia; more generalised sleep disturbance.
Somatic Symptoms	Physical complaints (joint pain, fatigue, headaches, palpitations) more common.	Physical symptoms may be present but less hormonal in origin.
Cognitive Symptoms	Often described as 'brain fog', memory lapses, poor concentration.	Slower processing, cognitive dullness linked to mood disturbance.

Emotional Reactivity	High emotional sensitivity; tearfulness, anger outbursts, quick shifts in mood.	Generally flattened affect, persistent sadness.
Self-worth	Heightened self-criticism, feelings of failure related to role changes (e.g., parenting).	Guilt and worthlessness common, but less hormonally reactive.
Response to Antidepressants	Often poor or partial response to antidepressants unless hormones also addressed.	Antidepressants usually effective when depression is non-hormonal.
Suicidality	May occur even in absence of severe overall depression.	Typically associated with severe depressive episodes.

Diagnostic Challenges

One of the key diagnostic challenges in menopausal depression is the mismatch in timing between psychological and physical symptoms, as research indicates that mood symptoms (e.g. depression, anxiety, irritability, and emotional instability) may appear several years before the cessation of menstruation (Kulkarni, 2018), and vasomotor symptoms such as hot flashes and night sweats, which are more commonly associated with menopause, tend to appear later, making it difficult for healthcare providers to immediately link depressive episodes to hormonal changes (Worsley et al., 2014). As a result, many women seeking treatment for new-onset depression or anxiety in their mid-40s may not be screened for hormonal fluctuations, leading to misclassification as MDD or GAD, which highlights the need for integrated screening protocols that incorporate both psychiatric and gynaecological assessments to improve diagnostic accuracy for those experiencing menopausal depression (Maki et al., 2019).

Unlike depression in younger or postmenopausal women, menopausal depression, specifically in the perimenopausal stage, is often episodic and directly influenced by hormonal fluctuations as studies indicate that it is not the overall decline in E2 levels but rather the erratic fluctuations in this hormone that serve as the primary trigger for mood disturbances during this time (Gordon & Sander, 2021). The effect is particularly more pronounced in women with a history of hormone-sensitive mood disorders, such as PMDD or PPD, as these conditions indicate an increased vulnerability to hormonal fluctuations (Soares & Cohen, 2001), therefore the hormonal instability during menopause may contribute to a completely new and unique presenting type of depression. Furthermore, research suggests a bidirectional relationship between sleep disturbances, vasomotor symptoms, and depressive symptoms, making it challenging to isolate depression as a distinct disorder rather than a symptom of broader menopausal changes (de Kruif et al., 2016). The findings highlight how hormonal fluctuations not only contribute to mood disturbances but may also exacerbate pre-existing psychiatric conditions, complicating both diagnosis and treatment.

Women with a prior history of depression, anxiety, or mood disorders are particularly vulnerable to worsening symptoms during menopause, as research indicates that those with a history of MDD face a higher likelihood of relapse, even if their symptoms had been well-managed before entering perimenopause (Worsley et al., 2014). Similarly, women with BD may experience increased mood instability, with a greater frequency of depressive episodes during menopause (Marsh et al., 2008). Additionally, panic disorder and GAD may intensify, often leading to misdiagnosis as standalone psychiatric conditions, rather than recognising them as part of hormonal changes during menopause (Kumar et al., Singh, 2023). This underscores the importance of screening women with pre-existing psychiatric conditions for menopausal influences, as failure to do so may result in inappropriate pharmacological treatment that does not address the hormonal component of their distress. Finally, another major diagnostic challenge lies in differentiating menopausal depression from MDD; while both conditions share common symptoms, there are key distinguishing factors, as seen in Table 2, that should inform clinical assessments.

Given these distinctions, clinicians should incorporate hormonal and menopausal screening into psychiatric evaluations and psychiatric screening into hormonal and menopausal evaluations to avoid misdiagnosis and ensure that women receive the most appropriate treatment for their condition (Hendriks et al., in press).

The Economic Burden of Untreated Menopausal Depression. The economic impact of undiagnosed and untreated menopausal depression is profound, affecting not only direct healthcare costs but also broader societal productivity. Studies indicate that depression during menopause leads to increased healthcare utilisation, reduced workforce participation, and substantial indirect costs associated with absenteeism and reduced workplace efficacy (DiBonaventura et al., 2012). Failure to address menopausal depression effectively results in both personal suffering and a significant financial strain on healthcare systems and economies worldwide.

Women experiencing menopausal depression are more likely to seek medical care, leading to increased healthcare expenditures. Research from the US has found that women with menopause-related depression have a higher rate of physician visits, emergency room admissions, and hospitalisations compared to their non-depressed counterparts (DiBonaventura et al., 2012; Whiteley et al., 2013). Additionally, the combined indirect and direct costs for healthcare institutions were found to be $3,066 and $1,075 higher, respectively, per woman with untreated menopausal depression (DiBonaventura et al., 2012).

Beyond healthcare costs, menopausal depression significantly impacts workforce productivity, as symptoms such as low mood, fatigue, cognitive difficulties, and anxiety can impair job performance, leading to increased absenteeism. Women with untreated menopausal depression miss an estimated 5.31% of total workdays per month, compared to 2.80% among non-depressed menopausal women, and those who do continue to work experience higher impairment while at work, with 25% reduced efficiency compared to 14.32% in non-depressed menopausal workers (DiBonaventura et al., 2012). In broader workforce analysis, depression and anxiety were identified as the strongest predictors of early retirement, reduced working hours, and job loss among

menopausal women (Whiteley et al., 2013). This trend not only affects the financial stability of individual women but also reduces the overall labour market participation, further widening gender disparities in career advancement and earnings, ultimately placing women at a long-term disadvantage.

Given the significant economic impact of menopausal depression, addressing its underrecognition and underdiagnosis is not only a crucial public health concern but also an important economic priority. As discussed, untreated depression during menopause contributes to increased healthcare costs, reduced workforce participation, and broader societal financial burdens; therefore, ensuring accurate diagnosis and early intervention of menopausal depression can mitigate these consequences, improving both individual wellbeing and economic outcomes.

Diagnostic Tools to Assess Menopausal Depression

Accurately assessing menopausal depression in clinical settings presents unique challenges, as conventional depression screening tools may not fully capture the hormonal, physical, and psychological components that characterise this stage of life. To address these diagnostic complexities, various screening tools have been utilised in both clinical and research settings to assess depression during the menopausal transition. General depression scales, such as the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), remain widely used due to their abilities to measure depressive severity across populations, however, menopause-specific outcome measures, like the Peri-Menopausal Depression Scale (MENO-D; Kulkarni et al., 2018), have been developed to account for the unique psychological and physiological experiences associated with menopause.

General Depression Screening Tools Used in Menopause Care. Traditional psychiatric assessment tools continue to play a significant role in diagnosing depression in menopausal women. The PHQ-9 remains one of the most commonly used self-administered screening tools for assessing depression severity, structured around the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for MDD (Kroenke et

al., 2001). The PHQ-9 provides a simple, four-point Likert scale that categorises depression severity from mild to severe, with high sensitivity and specificity for detecting major depression. However, a critical limitation of the PHQ-9 is that it does not differentiate menopausal depression from MDD, leading to potential misdiagnoses. Furthermore, because symptoms such as fatigue, sleep disturbances, and cognitive difficulties overlap between menopause and depression (Reed et al., 2010), the PHQ-9 may not accurately estimate depression severity in menopausal depression.

Another widely used depression screening tool is the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), which evaluates cognitive and somatic symptoms of depression. While the BDI-II provides a comprehensive assessment of mood and cognitive symptoms, it does not specifically differentiate menopausal depression from other types of mood disorders, and it is also heavily weighted toward cognitive distortions, which may lead to an underestimation of the role of hormonal influences on mood disturbances.

In medical populations, the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) is frequently used to assess both anxiety and depression symptoms. Unlike the PHQ-9 and BDI-II, HADS excludes somatic symptoms from its assessment, reducing the likelihood in false positives in menopausal women. However, HADS lacks suicidality measures and may not fully capture the severity and complexity of menopausal depression.

Menopause-Specific Depression Screening Tools. One of the most targeted tools for assessing menopausal depression is the MENO-D, a validated self-report measure developed to assess depressive symptoms specific to menopause (Kulkarni et al., 2018). This scale uses a five-point Likert format to evaluate core depressive symptoms such as irritability, mood swings, fatigue, sleep disturbances, appetite changes, feelings of worthlessness, and suicidal ideation. The MENO-D demonstrates strong internal consistency and test-retest reliability, making it a stable and reliable took for measuring menopausal depression over time (Kulkarni et al., 2018). However, as a relatively new scale, it has fewer longitudinal validation studies compared to more

established depression measures, and it also does not take vasomotor symptoms of menopause, which have been correlated with mood disturbances (Augoulea et al., 2019), into account. Another menopause-specific tool is the Menopause Rating Scale (MRS; Potthoff et al., 2000), which evaluates the broader physical and psychological symptoms of menopause. The MRS includes three primary symptom clusters: somatic symptoms (e.g., hot flashes, joint pain), psychological symptoms (e.g., depression, anxiety, sleep disturbances), and urogenital symptoms (e.g., vaginal dryness, urinary issues) (Potthoff et al., 2000). While the MRS is valuable in distinguishing mood symptoms from somatic complaints, it is not a depression-specific tool and may lack the sensitivity required to diagnose clinical depression. Additionally, it does not include assessments of suicidality or cognitive distortions, which are critical in psychiatric evaluations. The Greene Climacteric Scale (GCS; Greene, 1976) is an additional widely used menopause-specific assessment tool that evaluates both physical and psychological symptoms of menopause. It consists of three primary symptom domains: psychological symptoms, somatic symptoms, and urogenital symptoms (Greene, 1976). The GCS provides a broad assessment of menopausal distress and helps differentiate menopause-related depression from MDD, however, it is also not depression-specific and does not assess suicidality.

While the other menopause-specific screening tools provide valuable insight into overall menopausal distress, they are not depression-specific, and they lack a suicidality assessment. In contrast, the MENO-D offers a targeted assessment of menopausal depression, making it the most appropriate tool for research focusing on mental health outcomes during menopause. Given the high rates of undiagnosed depression and suicidality in menopausal women, the MENO-D's specificity allows for a more precise evaluation of depression linked to hormonal fluctuations, ensuring that mental health interventions are accurately tailored to this population.

Treatments for Menopausal Depression

Treating menopausal depression presents distinct challenges due to the intricate interplay between biological, psychological, and social factors previously discussed in

this chapter. Unlike depression experienced at other life stages, depressive episodes during menopause are often closely tied to hormonal changes, especially declining oestrogen levels, which directly influence neurotransmitter systems crucial for mood regulation (Soares & Zitek, 2008). This hormonal dimension distinguishes menopausal depression from other mood disorders, necessitating tailored interventions that incorporate hormonal, pharmacological, and psychosocial strategies (Freeman et al., 2006). Current survey figures describe between 10% and 65% of menopausal women experience mental ill health of varying severity (Freeman, 2015; Maki et al., 2019; Timur & Sahin, 2010), and it has been estimated that 20% of perimenopausal women present to their primary healthcare physician with depressive symptoms (Soares, 2006). However, treatment approaches for menopausal depression are not consistently integrated into healthcare systems (Stute et al., 2020), with many women not receiving targeted treatment (Green et al., 2015), possibly due to the diagnostic challenges outlined previously. If left untreated, menopausal depression can be associated with an increased risk of suicidality (see Martin-Key et al., 2024 for review).

Hormonal and Pharmacological Interventions

HRT, now commonly referred to as MHT (Kulkarni et al., 2024), although referred to as both in this thesis interchangeably, has been studied as a potential treatment for menopause-related depression, however, it remains a much-debated topic, with most menopause guidelines only recently considering it to alleviate low mood during menopause (NICE, 2024). Research suggests that oestrogen therapy is effective in reducing depressive symptoms during perimenopause, particularly in women with co-occurring vasomotor symptoms; an effect not seen in postmenopausal women (Stute et al., 2019). In fact, depression and anxiety associated with perimenopause has been found to be effectively treated with MHT with or without additional psychiatric support (Behrman & Crockett, 2024; Herson & Kulkarni 2022; Leonhardt, 2019). However, the most recent menopause guidelines do not explicitly recommend MHT as a standalone treatment for clinically diagnosed depression during menopause (NICE, 2024) with research suggesting that while MHT can be beneficial for women with pre-existing mental health conditions, it is often insufficient on its own for this demographic (Agarwal et al.,

2018; Bromberger & Epperson, 2018; Soares, 2008). For those with recurrent or severe depression, a combination approach integrating MHT, antidepressants, and psychotherapy may be required to achieve optimal symptom relief (Clayton & Ninan, 2010).

Effects of Different Types of MHT on Mental Health during Menopause. The impact of MHT varies depending on the type of hormone used, mode of administration and individual patient factors (Zhang et al., 2021). The available literature suggests varying degrees of effectiveness for different hormonal components, including testosterone, progesterone, and oestrogen, in addressing mood disorders, cognitive function, and overall psychological wellbeing during menopause.

Testosterone. Historically, the mood-enhancing properties of testosterone were first observed over 70 years ago when physician Robert Greenblatt noted improvements in energy, motivation, and mood among women receiving combined testosterone and oestrogen therapy (Greenblatt & Hair, 1942). More recently, testosterone has been identified as a potential treatment for postmenopausal low mood, with its benefits possibly linked to its effects on serotonin regulation (Studd & Panay, 2004). While research has primarily focused on testosterone's role in sexual function, emerging evidence suggests it may also have broader psychological benefits, with some studies indicating improvements in mood and overall well-being during menopause (Davis et al., 2003; Glaser et al., 2011; Montgomery et al., 1987; Scott & Newson, 2020). However, findings on testosterone's impact on mood regulation remain inconsistent, with some supporting a positive relationship between testosterone and depressive symptoms (Bromberger et al., 2010; Milman et al., 2015) or no relationship at all between testosterone and mood (Woods et al., 2008), highlighting the need for further research to clarify its role. Despite this uncertainty, access to testosterone treatment for menopausal women remains limited, primarily due to the lack of a UK-licensed testosterone product for women (Arnold et al., 2025).

Progesterone. Research on progesterone's impact on mood and depressive symptoms during menopause has produced inconsistent findings. While some studies suggest that progesterone has a stabilising or calming effect (de Lignières & Vincens, 1982; Toriizuka et al., 2000), specifically on anxiety symptoms during menopause (Arato, 1995), others report no significant impact or even worsened mood symptoms. A meta-analysis found that progesterone-alone therapy was less effective than oestrogen in reducing depressive symptoms, with smaller effect sizes (Zweifel & O'Brien, 1997). Similarly, some clinical trials have failed to establish a direct link between progesterone and mood stability, particularly when used without oestrogen (Spinelli, 2000). Conversely, a randomised controlled trial (RCT) found that transdermal estradiol combined with intermittent micronised progesterone over 12 months was more effective than placebo in preventing the onset of clinically significant depressive symptoms in initially euthymic perimenopausal and early postmenopausal women (Gordon et al., 2018). Interestingly, these benefits were observed primarily in early menopause, while later-stage postmenopausal women did not experience the same mood improvements. However, a systematic review of progestin-only treatment found no consistent improvement in mood symptoms during menopause (Dolitsky et al., 2020). These inconsistencies highlight the complexity of progesterone's role in menopausal mental health and suggest that its effects may vary based on individual biological factors, dosage, and method of administration, but further research is needed.

In addition to its potential mood effects, progesterone plays an essential protective role for the endometrium when oestrogen therapy is used in women with an intact uterus. Multiple studies have shown that unopposed oestrogen therapy significantly increases the risk of endometrial hyperplasia and endometrial cancer, while the addition of progesterone markedly reduces that risk by promoting endometrial shedding (Beral et al., 2005; Gambrell, 1977). This emphasises the importance of including progesterone in hormone therapy for non-hysterectomised women as a safety measure, however, for women who have undergone a hysterectomy, oestrogen-alone therapy is generally considered sufficient, and adding progesterone may increase risks (Haney & Wild, 2007).

Oestrogen. Oestrogen is the most extensively studied hormone in relation to mood regulation and cognitive function, with increasing evidence supporting its role in alleviating mental health symptoms during menopause. Research suggests that oestrogen therapy can improve depressive symptoms, reduce suicidal ideation, and enhance cognitive function (Gillies & McArthur, 2010; Karsidag et al., 2012; Onalan et al., 2005; Schiff et al., 2005). Multiple meta-analyses and RCTs indicate that oestrogen therapy is particularly beneficial in treating perimenopausal depression, particularly for mild to moderate depressive symptoms (Toffol et al., 2015; Zweifel & O'Brien, 1997), however, the effectiveness of oestrogen therapy is influenced by several factors, including the type of oestrogen used, the route of administration, and the timing of intervention.

Neuroscientific evidence highlights the widespread expression of oestrogen receptors in brain regions associated with neuroendocrine function, emotion, memory, and cognition (Riecher-Rössler, 2017), which suggest that oestrogens have multiple effects on mental functioning, contributing to improvements in affective symptoms of menopause (Rasgon et al., 2002; Schiff et al., 2005; Soares et al., 2001), reductions in aggressive and suicidal behaviour (Riecher-Rössler & Seeman, 2002), and enhancements in cognitive function (Boss et al., 2014; Maki & Dumas, 2009; Pompili et al., 2012). Moreover, oestrogen is believed to exert a protective effect against stress (Albert & Newhouse, 2019; Goldstein et al., 2010), further supporting its role in mental health regulation.

The strongest evidence for oestrogen's antidepressant effects comes from studies focusing on perimenopausal depression, where intervention trials have shown significant mood benefits. Early meta-analyses demonstrated that oestrogen therapy was effective in alleviating mild depression symptoms, particularly when administered during perimenopause rather than postmenopause (Zweifel & O'Brien, 1997), with more recent RCTs reporting significant improvements in mood among women receiving oestrogen therapy (Karsidag et al., 2012; Onalan et al., 2005; Schiff et al., 2005). Notably, some studies have even found oestrogen to be beneficial in cases of clinically diagnosed depressive disorders fulfilling DSM criteria (Morgan et al., 2005; Rasgon et al., 2002; Schmidt et al., 2000; Soares & Cohen., 2001).

Despite these promising findings, inconsistencies remain in the literature. Some studies, such as the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial, found no difference in remission rates between women receiving MHT and those who did not (Kornstein et al., 2013), however, it has been suggested that many of these studies either involved small sample sizes, initiated hormone replacement years after menopause, or used less potent forms of oestrogens (Wharton et al., 2013). Additionally, several trials examined the effects of oestrogen on mood in otherwise healthy women rather than those suffering from clinical depression, limiting their applicability to psychiatric populations (Gleason et al., 2015; Onalan et al., 2005).

The efficacy of oestrogen therapy in treating menopausal depression is also dependent on the specific type and method of hormone administration, as transdermal oestrogen therapy has demonstrated particular promise, especially for women experiencing both depressive symptoms and vasomotor disturbances such as hot flushes and night sweats (Gordon et al., 2018), possibly due to providing more stable blood concentrations, reducing hormonal fluctuations and minimising mood instability (Gordon & Girdler, 2014). Recent studies suggest that transdermally applied 17-β-estradiol (topical oestrogen therapy) is particularly effective for women with perimenopausal-onset depression, likely due to its superior bioavailability and ability to maintain more stable hormone levels in the brain (Gordon & Girdler, 2014), which is believed to be key in reducing stress sensitivity and mitigating mood disturbances associated with fluctuating oestrogen levels. Conversely, conjugated equine oestrogens (CEEs; derived from the urine of pregnant horses) have shown mixed results, with some studies reporting benefits in reducing anxiety and depression, while others have found transdermal estradiol to be less effective in certain populations (Hogervorst et al., 2022). However, the use of CEEs has declined in recent years due to growing concerns about their safety profile, limited clarity regarding their exact composition, and the availability of more precisely defined, bioidentical alternatives (Lippert et al., 2000). Furthermore, the ‘domino theory’ proposes that it is not just the loss of oestrogen but rather the fluctuations in hormone levels that trigger mood disturbances, highlighting the need for individualised treatment approaches (Riecher-Rössler, 2017).

Additionally, some studies indicate that oestrogen therapy alone may not be sufficient for all women, particularly those with a history of MDD or treatment-resistant depression. In such cases, combining oestrogen therapy with antidepressants (such as selective serotonin reuptake inhibitors [SSRIs] or serotonin-norepinephrine reuptake inhibitors [SNRIs]) has been shown to enhance treatment outcomes (Cheng et al., 2019; Gordon et al., 2018; Soares et al., 2003). This suggests that while oestrogen may help stabilise mood fluctuations associated with menopause, it may not fully address more severe psychiatric conditions, reinforcing the need for an integrated treatment approach.

Barriers to MHT in Menopausal Mental Health

The exclusion of MHT from most treatment guidelines for menopausal depression until recently may be due to multiple factors (Kulkarni et al., 2024). Historically, menopause has been framed primarily as a gynaecological issue rather than a neuropsychiatric one, leading to the frequent overlook or misdiagnosis of mental health symptoms in menopausal women (Gordon & Girdler, 2014). This framing was compounded by outdated medical views that characterised menopause as a hormonal deficiency disease requiring interventions such as hysterectomies, tranquillisers, or even institutionalisation for so-called ‘menopausal hysteria’ (Darke, 1996). These historical perspectives reinforced harmful stereotypes of menopausal women as unstable or mentally unwell, influencing how the medical community responded to their experiences (McCrea, 1983). During the mid-20th century, the discovery of exogenous oestrogens further promoted MHT as a ‘cure’ for menopause, supporting the idea that menopause was a pathological condition in need of treatment (Guillemin, 2002).

While debates around the medicalisation of menopause persist, the rejection of medical frameworks has also had consequences. In efforts to resist medicalisation, some feminist and public health narratives have downplayed the real physical and psychological distress that menopause can cause, leaving many women today without adequate mental health support (Guillemin, 1999). However, recent neuroscience research challenges this divide, suggesting that gonadal hormones function as neuroactive steroids, directly influencing neurotransmitter systems involved in mood

regulation (Fester & Rune, 2021). These findings point to a more integrated understanding of menopause, in which hormonal shifts may play a central role in mental health symptoms, and MHT could represent a valuable treatment option for hormonally driven depression. Nevertheless, long-standing assumptions about the separation between mood disorders and endocrine changes have likely delayed the incorporation of MHT into mainstream treatment guidelines (Kulkarni et al., 2024).

Another reason for MHT's exclusion from mainstream treatment recommendations is the lack of large-scale clinical trials directly comparing MHT with antidepressant therapy in the treatment of menopausal depression and anxiety (Pae et al., 2009); a research gap that may largely be due to long-standing misconceptions that hormonal fluctuations do not significantly contribute to mental illness (Kulkarni et al., 2024). Additionally, funding for menopause-related mental health research remains inadequate, as policymakers and key decision-makers in healthcare and research have historically not prioritised this area (Russo, 1990). Without robust comparative data, guidelines remain cautious in endorsing MHT as a primary treatment for menopausal depression.

The final major factor influencing the reluctance to recommend MHT for mental health concerns stems from residual concerns following the 2002 Women's Health Initiative (WHI; 1998) study, which raised alarms about potential links between MHT and an increased risk of breast cancer and cardiovascular disease, leading to a dramatic decline in MHT prescriptions worldwide (Rossouw et al., 2002). However, the WHI findings have since been widely criticised, with subsequent analyses refuting many of the original claims and highlighting methodological limitations (Stuenkel, 2015). Despite these reassessments, the initial media coverage of the WHI study continues to shape societal perceptions, including those of clinicians and patients, resulting in an ongoing hesitancy around prescribing MHT for menopausal depression (Kulkarni et al., 2024).

Summary of Gaps in the Literature

Despite increasing recognition of menopause as a critical period for women's mental health, research on suicidality during this transition remains significantly underdeveloped, as the literature overwhelmingly focuses on either general risk factors

for suicide or menopause-related mood disturbances, but few studies integrate these perspectives to robustly examine menopause and suicidality (An et al., 2022; Kulkarni, 2018), and to identify the best intervention options for women experiencing menopause. Given that midlife women (aged 50-54) have the highest suicide rates among females (ONS, 2024), this gap represents a critical oversight in suicidology and menopause research.

A major limitation in existing theoretical models of suicide is their androcentric nature, as they predominantly reflect male suicide patterns, often overlooking how female-specific factors, including hormonal fluctuations and gendered social roles, shape suicidal ideation and behaviour (Canetto & Lester, 1995). Even more contemporary models, such as the IMV Model of Suicide (O'Connor, 2011), have been largely tested on male-dominated and younger samples, raising concerns about their applicability to menopausal women (Lucht et al., 2020; Li et al., 2020; 2023; Mallon, 2018; Sardarzehi et al., 2023). This lack of gendered and age-specific validation leaves significant gaps in understanding the psychological processes leading to suicidality in menopausal women, which is exacerbated by the inadequate exploration of the role of hormonal fluctuations in suicidal behaviour. While research acknowledges that oestrogen and progesterone modulate neurotransmitter activity and mood (Brinton et al., 2015; Halbreich & Kahn, 2001), suicide research has largely ignored these biological factors, instead focusing on psychosocial contributors.

Additionally, while some studies suggest that MHT may have antidepressant effects (Gordon et al., 2018; Soares & Frey, 2010), clinical guidelines remain ambiguous about its role in treating menopause-related mental health issues (NICE, 2024). Moreover, MHT alone is not always effective, particularly for women with a history of MDD or other psychiatric conditions (Kulkarni et al., 2024), yet research on combined treatment approaches (e.g., MHT plus antidepressants or psychotherapy) remains scarce. Another important gap is the lack of research investigating the differential and combined effects of individual hormones such as oestrogen, progesterone, and testosterone on psychological outcomes during menopause. To date, the only research in this area is a systematic review by Stuursma and colleagues (2022), which examined hormonal effects on psychological wellbeing and sexual functioning in surgically menopausal women. The

review found that estradiol significantly improved depressed mood, while testosterone enhanced sexual functioning and desire; however, progesterone was typically included for endometrial protection and was not evaluated in isolation for psychological effects. Although this review provides valuable insight, it is not an empirical study and focuses on surgically menopausal populations, underscoring the urgent need for independent trials in naturally menopausal women to determine the distinct and synergistic psychological effects of these hormones.

The sociocultural dimensions of menopause and suicidality are also underexplored. While some studies highlight the stigma surrounding menopause and the reluctance to medicalise it (Darke, 1996; Guillemin, 1999), few have examined how these factors interact with suicidality. Similarly, the role of social support systems in mitigating menopause-related distress has not been sufficiently investigated. While research suggests that strong social networks are protective against suicidality (Shin & Park, 2023), the effectiveness of different types of support, whether from partners, healthcare providers, or peer groups, has not been rigorously tested in menopausal women. Lastly, barriers to accessing appropriate care for menopausal mental health remain a critical gap, as research indicates that many women seeking help for psychological symptoms of menopause are prescribed antidepressants rather than being offered MHT, despite guidelines recommending the latter as a first-line treatment (NICE, 2015). There is also evidence that healthcare professionals lack adequate training in recognising and treating menopause-related mental health challenges (Stute et al., 2020), leading to misdiagnosis and ineffective treatment pathways. Moreover, workplace policies and broader healthcare infrastructures often fail to accommodate the unique needs of menopausal women, contributing to increased stress and potential suicidality (Jauhar & Lau, 2018).

Furthermore, the experiences of informal carers who support women through menopausal mental health crises remain largely absent from the literature. Family members, friends, and menopause-specific healthcare professionals often serve as the first line of emotional and practical support, yet their perspectives are rarely included in research, despite evidence that caregiving in the context of suicidality can lead to significant psychological distress, including depression, burnout, and even suicidal

ideation (Carers UK, 2023; Marshall et al., 2023; Rytterström et al., 2020). Carers are also frequently excluded from qualitative studies due to their time-intensive nature (Runacres & Herron, 2023), resulting in interventions that fail to reflect their lived experiences or meet their needs (Corry et al., 2015; Larkin et al., 2018). Even GPs, who are often central to care, report low confidence in assessing suicidality in menopausal women (Coppens et al., 2018; Palmieri et al., 2008; Saini et al., 2016). Failing to understand how carers experience and respond to these crises may not only limit the effectiveness of support systems but also compromise outcomes for the women themselves.

How the Current Thesis Addresses Gaps in the Literature

To address these limitations, this thesis will systematically investigate the relationship between menopause and suicidality by centring women's lived experiences and the people that care for them through quantitative and qualitative research. By focusing on how women perceive the impact of menopausal symptoms on their mental health, this thesis will offer insights that are currently limited in theoretical models of suicide. Specifically, it will explore how suicidality manifests in menopausal women, the role of social support networks in either alleviating or exacerbating distress, and the barriers women face when seeking mental health care during this transition. Importantly, the thesis also recognises the significant gap in research on informal carers – family members, close friends, and menopause-specific healthcare professionals – who often provide frontline emotional and practical support to women in crisis. A dedicated qualitative study will explore these carers' experiences, highlighting how caregiving in the context of menopausal suicidality can impact their psychological wellbeing and uncovering unmet support needs. Including carers not only broadens the understanding of menopause-related distress but also strengthens the potential for designing more holistic and responsive care interventions. Furthermore, this thesis will investigate women's narratives of menopause to understand how identity shifts, societal expectations, and workplace environments shape their mental health experiences, also assessing the perceived effectiveness of different interventions, including MHT, antidepressants, and non-pharmacological coping strategies. Finally, the thesis will also examine associations between hormone treatment programmes and mental health, with

a focus on suicidality, and whether these treatments are effective at reducing suicidality over extended time periods.

Ultimately, this thesis aims to fill the critical void in suicidology and menopause research by offering a gender-sensitive, life-stage-specific exploration of suicidality. By amplifying the voices of menopausal women and those around them, and challenging the androcentric biases in existing suicide theories, this research seeks to inform more inclusive, effective mental health interventions and improve healthcare responses for this high-risk population. The thesis aims to produce large qualitative and quantitative samples to provide a thorough account of suicidality during the menopausal transition and identify the treatment options, support systems, and models of care that can best support women during this time.

Chapter Summary

This chapter provided an overview of the wider context of the thesis by exploring key concepts related to menopause, mental health, and suicidality. While the central focus of the thesis is suicidality during the menopausal transition, this chapter also examined suicidality from a broader lifespan perspective. This inclusion was important, as understanding suicide risk at midlife requires an appreciation of how vulnerability develops across the female life course. Suicide risk is shaped by dynamic and intersecting changes in biology (e.g., hormonal shifts), psychological and cognitive processes (e.g., emotional regulation, prior trauma), and social expectations (e.g., caregiving roles, stigma), all of which vary across different life stages. By tracing these patterns, the chapter established a developmental rationale for situating menopause within a continuum of female suicidality risk, rather than treating it as an isolated phenomenon.

It then examined the prevalence of suicide among midlife women, highlighting the increased risk during the menopausal transition and the lack of dedicated research addressing this issue. The chapter also reviewed existing theories of suicide, critiquing their androcentric biases and questioning their applicability to menopausal women. Furthermore, it critically engaged with the biopsychosocial aspects of menopausal

mental health, outlining how biological changes (e.g., oestrogen decline), psychological vulnerabilities (e.g., prior mental health conditions), and social influences (e.g., stigma, workplace challenges, and lack of support) intersect to shape women's experiences of suicidality. The role of healthcare responses and barriers was explored, emphasising the frequent misdiagnosis of menopause-related psychological symptoms, and the overall lack of menopause-aware mental health support. Importantly, this chapter also acknowledged a further gap in the literature: the overlooked experiences of informal carers, including family members, friends, and healthcare professionals, who support menopausal women through mental health crises. While carers play a critical role in recognising distress and facilitating care, they are often underrepresented in research, despite being vulnerable to psychological strain themselves. Understanding their perspectives is essential to developing more effective and inclusive models of care. Clear gaps in the literature were identified, including the absence of research directly linking menopause and suicidality, the failure of dominant suicide theories to integrate gendered and hormonal factors, and the lack of studies examining how social support and healthcare interactions influence suicidality risk during menopause, which this chapter positioned as critical areas requiring further empirical investigation.

The following chapters of the thesis will build upon these foundations by exploring the lived experiences of menopausal women and those who support them, with a specific focus on suicidality, social support systems, healthcare engagement, and coping strategies. They will also explore and compare HRT treatments in the context of mental health and suicidality. Each study presented will include a clear rationale, research aims, and justification of the chosen methodology, ensuring a comprehensive and nuanced understanding of the relationship between menopause and mental health.

Table 3. Summary of Key Gaps in the Literature and How They Are Addressed by This Thesis.

Gap in the Literature Identified	Addressed by Thesis Chapter
Limited integration of suicidology and menopause research, despite elevated suicide risk in midlife women.	Chapter 3: Menopause and Suicide: A Systematic Review.
Absence of stage differentiation (e.g., perimenopause vs. menopause) in suicidality research.	Chapter 3: Menopause and Suicide: A Systematic Review.
Insufficient exploration of the role of both hormonal fluctuations and lifestyle factors in suicidality during menopause.	Chapter 4: Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort
Lack of empirical research comparing the individual and combined effects of oestrogen, progesterone, and testosterone on psychological outcomes in naturally menopausal women.	Chapter 4: Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort
Under-exploration of the sociocultural dimensions of menopause, including stigma and reluctance to medicalise symptoms, in relation to suicidality.	Chapter 5: The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.

Lack of qualitative research exploring severe mental health challenges, particularly suicidality, during menopause, including how social support systems and other clinical or contextual factors may influence risk or resilience.	Chapter 5: The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.
Barriers to accessing menopause-informed mental health care remain underexplored; antidepressants are overprescribed despite MHT being a recommended first-line treatment.	Chapter 5: The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.
Lack of clinician training in menopause-related mental health challenges leads to misdiagnosis and suboptimal care.	Chapter 6: Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.
Experiences and support needs of informal carers (e.g., family, friends) and professionals are rarely included in suicidality research despite the emotional toll and key caregiving role.	Chapter 6: Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.

Thesis Structure

This PhD thesis makes a critical and original contribution to research, clinical practice, and policy concerning suicidality during the menopausal transition. While menopause has recently gained public and academic attention, its relationship to suicidal distress

remains significantly under-explored. This thesis addresses that gap through a mixed-methods programme of research designed to examine prevalence, lived experience, and clinical treatment within a menopause-informed framework. Drawing on systematic, quantitative, and qualitative methodologies, the thesis offers a multidimensional account of midlife women's mental health and suicidality.

1. Introduction

This chapter introduces suicidality as a global public health concern and contextualises it within the specific vulnerabilities of midlife, menopausal women. It defines key concepts such as suicidal ideation, behaviour, and self-harm, and examines demographic, hormonal, and psychosocial risk factors with a strong focus on the menopausal transition. The chapter also critiques existing suicide theories for their androcentric limitations and outlines the conceptual and empirical gaps that the thesis addresses.

2. Methodology

This chapter outlines the philosophical underpinnings and methodological rationale for adopting a mixed-methods design, combining qualitative, quantitative, and systematic review approaches. It details ethical considerations, participant recruitment strategies, data collection instruments, and analytic techniques, including narrative synthesis, thematic analysis, and longitudinal clinical data modelling. The chapter also reflects on positionality and steps taken to minimise researcher harm when working with sensitive topics.

3. Menopause and Suicide: A Systematic Review

This systematic review brings together existing international evidence on suicidal ideation, attempts, and deaths during menopause. Through narrative synthesis, the review highlights the limited volume and inconsistent quality of research in this area, pointing to conceptual gaps around hormonal sensitivity, diagnostic thresholds, and gendered experiences of distress.

4. Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort

This chapter presents a longitudinal analysis of data from a private specialist menopause clinic, examining changes in suicidality, depression, and menopausal depression scores over time across different MHT regimens and controlling for potential confounds such as BMI, smoking status, and antidepressant use. The findings emphasise the importance of multi-hormone treatments in menopause care for mental health and suicidality outcomes.

5. The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.

Using reflexive thematic analysis, this chapter explores the subjective experiences of women who encountered suicidality during perimenopause. Themes included cyclical symptom patterns, identity disruption, embodied overwhelm, and the failure of medical systems to recognise or validate their distress. The chapter highlights how suicidality often emerged outside diagnostic categories and was shaped by both hormonal and sociocultural dynamics.

6. Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.

This chapter extends the thesis' relational scope by exploring how clinicians and carers experience and respond to menopausal suicidality. Interview data reveal themes of burnout, helplessness, systemic fragmentation, and a lack of adequate training in hormonal mental health. These findings underscore the emotional toll on caregivers and the urgent need for better-informed, better-resourced care systems.

7. Discussion

This chapter synthesises findings across all studies, proposing an integrated framework that considers biological, psychological, and systemic contributors to menopausal suicidality. It reflects on the interplay between hormonal fluctuations and sociocultural dynamics, critiques the gender biases in existing suicide theories, and advocates for better-informed, intersectional approaches to suicide prevention, clinical training, and healthcare policy.

Throughout the thesis, emphasis was placed on dissemination and impact. The work has been presented at national and international conferences and will continue to be shared across academic, clinical, and policy platforms to ensure findings reach the communities they seek to support.

Chapter 2: Methodology

In this chapter, I will explain the conceptual framework and methodological approaches employed in this thesis. I will discuss the research paradigm debate concerning the most effective ways to generate knowledge and provide a comprehensive justification for the methodological positions that I have adopted throughout this work. Following this, I will highlight the role of patient and public involvement (PPI), as well as the concept of co-production in shaping the research process. The rationale and methodological justification for each included study will then be discussed in turn, with reflective insights providing context for the decisions made. Further details of the methods used, the limitations inherent in the research designs, and the analyses conducted for each study are discussed in detail in each empirical chapter. Finally, ethical considerations will be explored.

Epistemology

Various methods of acquiring and interpreting knowledge in research have long been a subject of significant debate within the research community. Research can be approached from various perspectives or through paradigms, a term that can be traced back to Ancient Greece (Waterlow, 1982), currently defined as an *"entire constellation of beliefs, values, techniques… shared by members of a given community"* (Kuhn, 1962 p. 162). Paradigms relate to how we observe and interpret phenomena in the world, influenced by our cultural, philosophical, political, and research perspectives, and offer the contextual and conceptual framework that guides research activities aimed at generating new knowledge (Anand et al., 2020). Kuhn (1962) argued that paradigm shifts are crucial for scientific progress. He suggested that such shifts arise when new knowledge gained through scientific discovery challenges established scientific assumptions (Anand et al., 2020), resulting in the existing paradigm being replaced when it can no longer adequately explain phenomena. Thus, a new paradigm emerges that provides a different perspective for researchers to generate and interpret knowledge (Mertens, 2012).

A paradigm, although unable to prove or disprove (Guba & Lincoln, 1989), fundamentally influences how research is conducted, how knowledge is acquired, and how findings are elucidated. Therefore, before starting this thesis, it was necessary to reflect on my own research objectives, and what ontological and epistemological beliefs regarding the nature of reality and knowledge were important to me, alongside exploring the dominant perspectives within the field (Morgan, 2007).

Epistemology is concerned with the theory of knowledge; specifically, the nature, origin, and limits of what we can know. It constitutes a distinct belief system that shapes how research questions are asked and answered (Morgan, 2007). It has been defined as *"a way of understanding and explaining how I know what I know"* (Crotty, 1998 p.3.), investigating the foundations of what is considered knowledge, how this is developed, the validity of the researcher's claims, and the relationship between researcher and research subject. On the other hand, ontology, defined as *"the study of being"* (Crotty, 1998 p.10), is concerned with the nature of reality. It addresses the structure of the world, the characteristics of the entities that inhabit it, and how they interact (Guba & Lincoln,

1989). Each paradigm is grounded in specific assumptions about its ontological and epistemological stance (Scotland, 2012). These differing perspectives on reality (i.e. “what is”) and the nature of knowledge (i.e., “what it means to know”) shape the methodologies and methods aligned with each paradigm (Scotland, 2012). Consequently, the strategies and methods researchers employ to collect and interpret data are influenced by their philosophical position and the ontological and epistemological principles inherently tied to it (Kivunja & Kuyini, 2017).

There are four dominant epistemological stances that influence the ways in which research questions are asked and answered: post-positivist which typically employs quantitative methods; constructivist, which emphasises qualitative approaches; and transformative and pragmatic paradigms, which advocate for combining both methods (Mertens, 2012; Kaushik & Walsh, 2019). Because of differences in ontological and epistemological positions, paradigm debates have placed quantitative and qualitative methodological approaches in opposition for several decades (Teddlie & Tashakkori, 2009).

Quantitative research approaches are often viewed as the ‘gold standard’ research approach, derived from a positivist paradigm (Scotland, 2012). Positivism, historically, has dominated scientific research. It assumes the ontological position of realism: the view that there is one single, external reality that exists independently of human consciousness (Crotty, 1998). It emphasises objectivity and neutrality on the part of the researcher (Scotland, 2012), and prescribes an experimental methodology that involves hypothesis testing and deductive reasoning (Khaldi, 2017). This approach relies on objective measurements to ensure results are free of biases to preserve validity of the research results (Slevitch, 2011), often employing closed-ended questionnaires, statistical analyses (e.g. descriptive analyses and inferential statistics), randomisation, blinding, and large sample sizes (Guba & Lincoln, 1994; Scotland, 2012).

Conversely, qualitative research aligns with a constructivist paradigm, which posits that multiple, subjective realities exist, shaped by individuals’ social worlds, cultural values, and social contexts (Sale et al., 2002; Scotland, 2012). This perspective suggests that research findings are co-constructed through interactions between the researcher and the participant, with a focus on understanding how personal experiences and views

influence meaning and interpretation (Yardley & Bishop, 2015; Scotland, 2012), therefore there are multiple constructions of the world and no single, objective reality (Mays & Pope, 1995). Thus, qualitative research favours smaller, purposeful samples and data collection methods such as open-ended interviews, focus groups, and observations (Scotland, 2012), often in the participants' natural environments (Bryman, 2004). Rather than aiming for generalisability, it seeks transferability, allowing readers to assess the applicability of findings to other contexts (Korstjens & Moser, 2018; Slevitch, 2011).

Development of Pragmatism

There has been a longstanding debate over the most suitable epistemological approach, with quantitative and qualitative research often regarded as distinct and opposing. This division has led to the development of the 'incompatibility thesis', which suggests that quantitative and qualitative methodologies should not be combined (Onwuegbuzie & Leech, 2005). Despite this, some researchers advocate for the integration of both methodologies to leverage their strengths and mitigate their weaknesses (Patton, 1990), which results in the emergence of a third paradigm known as pragmatism (Johnson & Onwuegbuzie, 2004). Pragmatism prioritises the creating of knowledge through inquiry and practical action, focusing on practical approaches to problem-solving to answer specific research questions (Morgan, 2014).

Despite its merits, pragmatism has faced criticism from researchers due to its 'what works' philosophy, as critics argue this approach may result in a lack of theoretical depth and coherence in research (Philips, 1995) and lacking clear guidelines making its application challenging for researchers (Creswell & Clark, 2017). Nevertheless, proponents of pragmatism underscore the importance of a flexible, adaptive, and problem-orientated approach, which focuses on finding practical solutions to real-world issues (Biesta, 2010). The pragmatic paradigm supports the use of mixed methods, advocating that research methods should align with the specific research question, rather than adhering to a singular methodological framework (Mertens, 2012). This paradigm encourages the combination of methodologies in ways that effectively address critical research questions; therefore, this thesis employs the said pragmatic approach,

combining quantitative and qualitative methods to thoroughly address gaps in the literature.

Pragmatic Mixed Methods Research

Mixed methods research (MMR) has become a leading methodological approach in recent years, particularly within the field of psychology (Povee & Roberts, 2015; Tashakkori & Teddlie, 2010). By blending quantitative and qualitative techniques, MMR seeks to draw on the unique strengths of both to answer research questions more comprehensively. Quantitative methods are regarded for their consistency, replicability, and comparability, while qualitative methods excel at exploring subjective experiences, meanings, and open-ended data obtained through interviews, textual analysis, or media (Kral et al., 2012).

However, there are still debates about the precise definition of MMR (Moseholm & Fetters, 2017), as some describe MMR as the collection, analysis, and integration of data from qualitative and quantitative methods within a single study (Tashakkori & Creswell, 2007), others view it as just the collection and analysis of both data types, and others emphasise the complete integration of the two approaches (Doyle, Brady, & Byrne, 2009).

MMR is valued for its ability to provide a holistic understanding, ensuring validation and triangulation, addressing practical applications, and tackling complex research questions (see Table 4 for a summary; Greene et al., 1989). While numerous studies have explored the uses and benefits of MMR, many align with the purposes outlined by Greene and colleagues (e.g., Bryman, 2006; Creswell & Creswell, 2017; Teddlie & Tashakkori, 2009), as detailed in Table 4.

Table 4. Purposes for Conducting MMR (Greene et al., 1989).

Purpose	Description	Rationale
Triangulation	Integration and verification of findings obtained through multiple methodologies.	Enhances validity by reducing biases inherent to any single methodological approach.
Complementarity	Uses findings from one method to further explain, deepen, illustrate, or clarify findings from another.	Improves interpretative richness and construct validity by leveraging strengths and compensating for weaknesses across methods.
Development	Applies outcomes from one methodological approach to guide or shape another.	Strengthens validity through the complementary use of methodological strengths.
Initiation	Leverages contradictions identified across methods to refine research questions or inspire new lines of inquiry.	Expands the comprehensiveness and depth of analysis by considering multiple viewpoints.
Expansion	Broadens the research scope by strategically employing diverse methodological approaches.	Enhances the overall reach and applicability of research by selecting methods tailored to address multiple research objectives.

Despite its widespread use, MMR is not without its challenges. Some critics argue that quantitative and qualitative methods are fundamentally incompatible and cannot be

effectively merged in a single study (Hathcoat & Meixner, 2017; Pasipamire & Masuku, 2022). Additionally, practical concerns have also been raised, including the additional demands on time and resources, and the expectation for researchers to master both methodologies and their integration (Hathcoat & Meixner, 2017; Pasipamire & Masuku, 2022). Furthermore, some authors have expressed concerns that MMR designs may relegate qualitative secondary to quantitative methods (Denzin, 2010; Giddings, 2006; Yin, 2006) due to funding concerns, removing the importance of data gained from qualitative research. Regardless, MMR remains a widely endorsed and increasingly prominent methodology in psychology, and the following section will examine its utility and relevance specifically in the context of suicide prevention.

Mixed Methods for Suicide Research

Suicide research has traditionally relied on heavily on quantitative methods, while the use of mixed methods remains relatively uncommon (Kral et al., 2012). However, this reliance has limited the ability to fully capture the complexity of suicide, arguably contributing to several gaps in research. For instance, the use of small sample sizes in studies like randomised control trials (RCTs) often leads to poor reliability of results, which, in turn, creates challenges in assessing the generalisability, efficacy, and scalability of suicide prevention interventions (O'Connor & Portzy, 2018). Limiting suicide to quantitative methods, which are inherently focused on uncovering a singular reality, has led to the omission of crucial aspects of suicidality, such as the subjective experiences of individuals affected by suicide (Kral et al., 2012) which are critical in understanding the phenomenon (Schecter et al., 2016). Incorporating mixed methods approaches to suicide research offers a way to address these limitations, providing a deeper understanding of risk factors, help-seeking behaviours, prevention strategies, and interventions. By combining qualitative and quantitative methods, researchers can create a middle ground that bridges existing gaps and advances suicide research both theoretically and methodologically (Kral et al., 2012), with quantitative techniques promoting generalisable findings, and qualitative methods providing rich, subjective insights into individual experiences, emotions, and cultural contexts (Kral et al., 2012).

Consequently, this thesis adopts a pragmatic mixed methods framework to address the identified gaps in the literature. The primary aim of this PhD was to investigate the prevalence and determinants of suicidality in menopause care, therefore the decision to use MMR reflects its flexibility in capturing a diverse range of perspectives (Regnault et al., 2018). This is specifically beneficial in suicide research as integration of qualitative and quantitative methods allows for a comprehensive exploration of both the subjective and objective dimensions of suicide (Kral et al., 2012). Mixed methods were particularly well suited to answering the research questions, which included exploring women's experiences of suicidality and mental health during menopause, identifying barriers to care, and understanding the role of social support, identity, coping strategies, and healthcare responses. By using MMR, this PhD aims to account for the multifaceted nature of suicidality and provide insights into the perspectives of those involved, ensuring findings are both relevant and practical for healthcare settings.

Reflective Note.

My previous research and professional experience have been focused exclusively either on quantitative or qualitative methods, therefore I embraced the opportunity to apply MMR in this PhD. It represented a valuable learning experience, allowing me to develop my research skills by understanding how quantitative and qualitative methodologies can complement each other to deepen insights.

From the outset, I was eager to contribute to the limited evidence based on suicide risk during menopause. The quantitative component provided me with a valuable opportunity to enhance my statistical skills, an area where I previously lacked confidence. Additionally, the inclusion of qualitative interviews provided a richer dimension to the quantitative data, offering context and deeper understanding of issues such as the under-recognition of suicide risk and the challenges of accurate diagnosis in this population. Engaging directly from menopausal women and their loved ones about their experiences was both profoundly interesting and emotionally taxing, as they shared deeply personal and often distressing accounts. I am deeply grateful for their willingness to divulge such

experiences, and I feel privileged to have been entrusted with their stories, which they bravely permitted to be used to help others through this PhD.

Public and Patient Involvement (PPI) in Research

PPI refers to the active collaboration between researchers, patients, and the public in shaping and conducting research, ensuring that studies are relevant, inclusive, and reflective of real-world experiences. PPI is increasingly being recognised as essential in mental health research, as it enhances the quality, credibility, and impact of findings. In the UK, the importance of meaningful PPI is outlined in the National Standards for Public Involvement in Research (National Institute for Health Research [NIHR], 2019), which emphasises that individuals with lived experience should contribute to every stage of the research process. The benefits of PPI are well documented, with research demonstrating that it improves the quality and relevance of studies (Ennis & Wykes, 2013), empowers and validates the experiences of PPI contributors (Awenat et al., 2018), and provides researchers with valuable insights and alternative perspectives that may otherwise be overlooked (Parkinson et al., 2020).

The Importance of PPI in Suicide Research

Suicide research presents unique ethical and methodological challenges, particularly when working with high-risk individuals; therefore, integrating lived experience perspectives into the design, methods, and aims of studies ensures that they are trauma-informed, ethically sound, and more reflective of the real needs of at-risk populations. PPI in suicide research plays a critical role in identifying study outcomes, reducing stigma, and ensuring ethical research practices. Research has highlighted the importance of providing adequate emotional support and ethical considerations when engaging in studies on highly sensitive topics, emphasising the need for trauma-informed approaches that minimise participant distress (Littlewood et al., 2019). Additionally, co-producing suicide prevention strategies with individuals who have lived experience significantly enhances study design, recruitment, and ethical decision-making, ensuring that research is both meaningful and participant-centred (Dewa et al., 2022).

Beyond ethical considerations, PPI fosters long-term engagement by developing trust between the communities affected by suicide and the researchers, as studies indicate that involving individuals with lived experience increases participant engagement, improves the acceptability of findings, and ensures that research leads to actionable outcomes (Parkinson et al., 2020). However, despite these benefits, PPI in suicide research remains inconsistently reported, limiting the ability to assess its full impact (Littlewood et al., 2019).

The Importance of PPI in Women's Health Research

Similarly, PPI is essential when exploring women's health, where patient experiences are often overlooked (Gibbons & Lo, 2022). Involving women in this research helps prioritise patient concerns, refine study design, and address gaps in care, ultimately leading to more relevant and impactful healthcare interventions (Gibbins & Lo, 2022). Studies in reproductive health and maternity care demonstrate that PPI improves recruitment, enhances study retention, and increases participant engagement by aligning research with the needs of those it aims to support (Bedwell & Lavender, 2020).

PPI also plays an important role in developing patient-centred interventions, ensuring they are tailored to the needs and preferences of the target population. For example, research on digital health interventions for women's pelvic floor muscle training has shown that incorporating patient perspectives results in higher engagement and improved accessibility (Harper et al., 2024). However, PPI in women's health, specifically menopause-related mental health research remains limited.

Challenges of PPI

One of the key challenges in utilising PPI in suicide and self-harm research is ensuring the safety and wellbeing of those involved, as contributors often draw upon their own lived experiences when shaping research projects (Littlewood et al., 2021). In this specific context of menopause and suicide, there is concern that reflecting on past experiences may cause distress or re-trigger negative emotions; however, research

suggests that such involvement may not necessarily lead to harm. A meta-analysis of 18 studies found that participation in suicide-related research is not typically associated with increased levels of distress or suicidal thoughts, with participants reporting small benefits (Blades et al., 2018). Many individuals may report positive outcomes from participation in PPI, and in some cases, these benefits can be sustained over time (Littlewood et al., 2021).

However, it is important to recognise the difference between research participation and PPI involvement. While research studies undergo formal ethical review processes which assess the risk of psychological distress to participants, PPI processes are not routinely subjected to the same formal review standards (Littlewood et al., 2021). This lack of oversight raises concerns about the emotional burden placed on PPI members, particularly those involved in sensitive areas such as suicide prevention and women's mental health research. Given that women – especially those experiencing menopause or hormonal fluctuations – are at a higher risk for depression and suicidality, their involvement in research is critical for ensuring patient-centred, effective interventions (Gibbins & Lo, 2022).

Despite these challenges, excluding PPI from suicide and women's health research would be both unethical and methodologically unsound. Lived experience input ensures that research studies use appropriate recruitment strategies, meaningful study materials, and ethical methodologies that are sensitive to the needs of the population being studied (Couler & Ellins, 2006). In sum, the benefits of including appropriate PPI in suicide-related research appears to outweigh the risk of possible harm.

Formulation and Governance of PPI

Two dedicated PPI groups was established for this thesis, bringing together individuals from across the UK who had personal experiences with mental health struggles and suicidality, along with their supporters, and healthcare professionals. Among the public advisory group (PAG) were professionals working in suicide prevention at Merseycare NHS Foundation Trust, Warrington Government, and other UK-based organisations. Additionally, several menopause specialists participated. The group comprised women

with a professional interest in menopause, suicide prevention or mental health who had also personally navigated psychologically challenging menopausal transitions. In total, 13 women and one man joined the PAG. A professional steering group was also established to provide expert insight and guidance on the research, which comprised eight female professionals, including general practitioners (GPs), psychiatrists, menopause counsellors, consultants, and researchers, who contributed valuable perspectives on key aspects of the study.

Recruitment for the PPI group was conducted through a combination of interview referrals and word-of-mouth recommendations. Participants who had been interviewed for the study shared information about the group with friends and colleagues whom they believed would be interested. An advert outlining the study's background and the role of PPI members was circulated (see Appendix 1), which helped attract engagement. To ensure clear expectations and structured involvement, a set of Terms of Reference was developed and agreed upon by all members (Appendix 2). Meetings were scheduled tri-annually, with Doodle polls used to coordinate dates and times that accommodated members' diverse professional and personal commitments. Agendas were distributed at least three days in advance to allow for preparation. Given that PPI members were located across various regions of the UK, all meetings were conducted virtually via Microsoft Teams to facilitate accessibility and participation.

Involvement of PPI in the Present Thesis

In this PhD, PPI played an integral role throughout the research process, ensuring that the project remained grounded in the lived experiences of those more affected by suicidality during menopause. PPI members were involved in shaping the research focus, advising on study design, and interpreting findings to ensure they accurately represented participants' experiences. Their contributions helped refine the study methodology, enhance ethical considerations, and strengthen the real-world applicability of the research. PPI also highlighted the significance of suicidality during menopause, reinforcing the need for this research and shaping the study's direction. Through discussions, it became evident that women and their supporters benefited from talking

amongst themselves, as sharing experiences fostered a sense of validation, reduced isolation, and helped normalise the psychological challenges of menopause. These conversations not only provided insight into the emotional impact of menopause-related mental health issues but also strengthened the justification for exploring this topic in greater depth. Additionally, PPI served as a key recruitment pathway, facilitating access to participants with lived experience and ensuring that the study reached those directly affected by menopausal mental health struggles. However, PPI discussion also revealed the potential bias in focusing solely on clinical populations, as only recruiting from specialist services may lead to a sample that predominantly reflects individuals with the financial means or specific characteristics that make them more likely to seek and access such care. This insight underscored the importance of expanding recruitment to include women from the general population to capture a broader range of menopausal experiences and avoid overrepresenting individuals with access to private healthcare.

Discussions within the steering group covered various methodological, clinical, and societal issues related to menopausal mental health. Methodological considerations included determining when data saturation had been reached and consolidating interviews for thematic analysis. There was also a focus on the disparity in research volume between postnatal depression and menopausal depression in group discussions on evidence, highlighting how postnatal research is more widely accepted and encouraged in academic and clinical settings, whereas menopause-related research often faces pushback from both healthcare professionals and the media. The need for psychiatrists and menopause specialists to collaborate for holistic care was emphasised within the group, as most clinicians reported that their menopausal patients presented with mental health symptoms, yet few had received formal education on the intersection between menopause, mental health, and hormone replacement therapy (HRT) during their medical training. A recurring theme was the difficulty women faced in obtaining HRT, with many feeling they had to research and advocate for themselves due to a lack of understanding in primary care. Notably, some women who had experienced suicidality reported a significant improvement in their mental health after starting HRT, though the group acknowledged that other factors such as lifestyle changes could also play a role in symptom relief. Additionally, the group considered avenues for dissemination, including

presenting preliminary findings at conferences while preparing for potential resistance. Recent media coverage on menopause and HRT was also discussed, particularly articles debating the role of HRT in treating menopause-related depression, and it was noted that while some articles suggested new guidelines advising against HRT for depression, others pointed out that the issue was largely due to a lack of research rather than conclusive evidence against its effectiveness.

Overall, PPI was fundamental to refining the study design, recruitment strategy, methodology, and research priorities, ensuring that the project remained both clinically relevant and meaningful, and situated the research within the broader clinical and societal landscape of menopause and mental health.

Reflective Note.

The PAG was particularly powerful due to the presence of individuals with direct, lived experience of suicidality during menopause. Among the group were two women who had attempted suicide and one man whose wife had died by suicide during her menopausal transition. Hearing their perspectives brought a deeply emotional and profound dimension to our discussions, underscoring the urgency and severity of the issue.

It was a privilege to create a space where these individuals felt supported and where their voices were heard. The discussions were not only cathartic for them but also eye-opening and informative for others in the group. The women who had survived suicide attempts reflected on how hearing the husband's experience of loss and grief gave them a new perspective on the impact of suicidality, reinforcing how devastating the outcome could have been for their own loved ones. At the same time, the husband expressed that it was powerful to hear from other women who had experienced similar struggles to his late wife, as it validated that her suffering was not an isolated case, but rather part of a wider under-recognised issue.

The group sessions highlighted the breadth of experiences and severity of menopausal suicidality, offering a rare opportunity for those affected to connect, share, and support each other, with many PPI members finding it meaningful to hear from others who had

been through similar, or in some cases, even more severe situations, helping them to process their own experiences with greater understanding and reflection. The power of collective experience reinforced the importance of this research, demonstrating the need for improved awareness, better clinical support, and targeted suicide prevention strategies for menopausal women and their supporters.

Specialised Menopause Service

Newson Health is a private healthcare clinic specialising in menopause care, providing personalised treatments to support women at all stages of the menopausal transition. It focuses on holistic care, addressing a wide range of physical, emotional, and psychological symptoms associated with hormonal changes during this time. Based in Stratford-upon-Avon, the clinic also offers in-person services at its centres in Stratford and London, alongside remote consultations to individuals across the UK. The clinical team includes doctors, nurses, pharmacists, and healthcare assistants with specialist training in menopause care, holding qualifications such as MRCP, FRCGP, DRCOG, and certifications in sexual and reproductive health. The team at Newson Health observed an increasing number of women presenting with severe mental health difficulties during menopause, some of whom were experiencing suicidality. This trend highlighted an urgent need to better understand the relationship between menopause and mental health, as well as to explore how these challenges are being managed in the clinic and beyond.

However, as a private healthcare provider, Newson Health predominantly serves a specific demographic – often those with the resources, support networks, awareness, and financial means to access private healthcare. This raised concerns that the findings from this population might be biased and may lack generalisability to the broader menopausal population. To address this limitation, we expanded the study to include qualitative interviews with women from the general population, as we aimed to capture a more diverse range of experiences and ensure the research reflected the reality of menopausal women across different demographics.

Data collected from Newson Health Wellbeing and Menopause Clinic and the general population informs this PhD thesis.

Participant Sampling and Recruitment

The total sample for this study included 1,027 individuals who had experienced or were currently experiencing menopause.

Quantitative Study Recruitment

Participants in the quantitative component of this thesis were women who were currently experiencing menopause and receiving treatment at Newson Health, a specialist menopause clinic. The total sample for the quantitative study included 957 individuals. Women were included in this study if they met the following criteria:

- Living in the UK
- Aged 18 or over (no upper age limit)
- Currently experiencing menopause (defined as still having menstrual periods but also experiencing symptoms believed to be linked to menopause)
- Experiencing mental health difficulties during the menopausal transition
- Newson Health patients were receiving treatment both in person and remotely, allowing for a geographically diverse sample within the UK.

To ensure the study effectively captured the intersection between menopause and mental health, a bespoke Mood and Menopause Questionnaire (MMQ) [see Appendix 6] was developed for research purposes. This questionnaire was developed by integrating two existing validated tools: the Peri-Menopausal Depression Scale (MENO-D; Kulkarni et al., 2018), which assesses hormonal depression symptoms, and the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), a widely used clinical depression measure that includes a suicidality component. These were not part of routine clinical data collection but were specifically designed and administered as part of this study to address the research questions. By integrating both hormonal and clinical dimensions,

the MMQ allowed for a nuanced assessment of mood disturbances during the menopausal transition.

Qualitative Study Recruitment

The qualitative studies included both those currently experiencing menopause and those reflecting on past menopausal experiences. Participants in this component were drawn from Newson Health patients and the general population, ensuring a broad representation of experiences. The total sample for the qualitative studies included 70 individuals, comprised of:

- 19 staff members at Newson Health (including GPs, administrative staff, pharmacists, and nurses)
- 17 patients from Newson Health
- 25 women from the general population
- 9 loved ones (e.g., husbands, family members, or friends of menopausal women)

The inclusion criteria for qualitative participants mirrored those for the quantitative study but also included individuals who had already experienced menopause in the past.

Participants were drawn from across the UK, as qualitative interviews were conducted online, allowing for a diverse geographic representation. Additionally, some Newson Health patients were receiving treatment remotely, further enhancing the diversity of geographic representation in the quantitative data also.

To recruit menopausal women for the qualitative study, to ensure safeguarding, Newson Health GPs identified and invited participants who were experiencing or had experienced severe mental health difficulties, including suicidality, during menopause. This invitation occurred during pre-scheduled consultations, either face-to-face or online; the timing of which was up to the GP as they were best positioned to determine the most appropriate time to introduce the study. If someone expressed interest in participating, the GP shared their contact details (email) with the lead researcher (OH), who then reached out to arrange an interview. The researcher also provided participant information sheets outlining the purpose and scope of the interviews, participation details, and

confidentiality measures. In addition, women from the general population were recruited through a social media advertisement that provided information about the study, including eligibility criteria and the study's purpose. Interested individuals were invited to contact the lead researcher directly to express their interest, where they would be sent participant information sheets and given the opportunity to ask questions before scheduling an interview.

For loved ones, GPs sometimes asked women during appointments if their husbands, family members, or friends might be willing to participate, however, women were also asked during their own interviews by the lead researcher if they knew of any loved ones open to participating. The same recruitment process was then followed for these participants. Similarly, for clinic staff, the lead GP on the study (CC) sent an email inviting staff members with relevant experience – such as supporting menopausal patients with mental health challenges or suicidality – to partake in the study. Interested staff followed the same process to arrange interviews and receive participant information.

Interviews were then arranged with all those who consented to participate in the study. Menopausal women were excluded from being invited to interview if their GP at the clinic determined they were actively suicidal, and their condition was not being managed effectively enough to safely participate. GPs typically declined participation due to time constraints or scheduling conflicts, however many GPs accommodated the study by organising interviews outside of their regular working hours.

The Interview Process. Interviews with staff members were conducted to gain insights into the professional experiences and challenges of supporting women facing mental health difficulties, particularly suicidality, during menopause. Staff members from Newson Health, including GPs, administrative staff, pharmacists, and nurses, were interviewed to ensure a range of professional perspectives were captured. The rationale behind interviewing staff was to understand their awareness, knowledge, and perceptions of mental health challenges during menopause, as well as their experiences in providing care within clinical settings. The staff interview schedule was designed to explore their professional experiences, perceived barriers to providing

effective support, the adequacy of training received in managing mental health crises, and suggestions for improving clinical practice.

Women currently experiencing menopause or who had experienced menopause previously were interviewed to capture their personal lived experiences, with a particular emphasis on mental health challenges, including suicidality. Interviews included patients attending the specialist menopause clinic and women recruited from the general population, providing a broader, more diverse perspective and minimising potential bias associated with private healthcare access. The rationale for interviewing this group was to better understand the severity and nature of psychological distress during menopause, their interactions with healthcare services, and the effectiveness of support received. The service user interview schedule explored general experiences of menopause, specific experiences with healthcare providers (including the specialist clinic), strategies they used to manage their suicidal or self-harm related thoughts, changes in suicidality over time, and any additional support they sought.

Loved ones, including family members and friends of menopausal women, were interviewed to provide an external perspective on the mental health challenges faced by women experiencing menopause-related suicidality. The aim was to capture the experiences of those closely supporting women during this challenging period, to understand the indirect impacts of menopause-related mental health crises on caregivers, and to identify any gaps or areas for improvement in healthcare provision from the perspective of support networks. The loved ones' interview schedule included questions about their perceptions of their loved ones' experiences, interactions with healthcare services, their observations on how effectively healthcare professionals managed suicidal thoughts, and suggestions for improvements. This approach provided a holistic understanding of the impact of menopause-related mental health challenges from multiple viewpoints, enriching the study’s depth and context.

Reflective Note.

Building rapport with the staff at Newson Health was a priority for me, as their support was essential for recruiting participants for the study. Additionally, as I would also be

interviewing some of the staff, I wanted them to be familiar with me and this research, and to feel comfortable discussing potentially sensitive topics with me. To foster this support, I made several visits to the clinic, which was a 3.5-hour journey each way. These visits provided valuable opportunities to meet and engage with a variety of staff members, including administrative staff and GPs, allowing me to better understand their roles and processes within the clinic, and for them to understand the aims of this research.

I was fortunate enough to sit in on several GP consultations, which not only deepened my understanding of their practices in the clinic but also enriched my perspective on the challenges they faced when supporting menopausal women.

Design of the Study: Thesis Approach

A convergent parallel mixed methods design was employed to explore the presentation and determinants of suicidality during menopause. This design enabled the simultaneous collection and analysis of qualitative and quantitative data (Creswell & Clark, 2017), with the quantitative strand used not only to describe symptom patterns, but also to examine associations and evaluate the impact of treatment over time. Equal priority was given to both types of data, which were analysed independently within the context of each specific study. Subsequently, the quantitative and qualitative findings were merged and interpreted collectively, complementing each other, and ensuring a more comprehensive understanding of suicidality during the menopausal transition (see Box 1 for an outline of study methods).

Box 1. Quantitative and Qualitative Methodologies Used.

Method	**Data Collection**
Quantitative	Peri-Menopausal Depression Scale (MENO-D)
	Patient Health Questionnaire-9 (PHQ-9)
	Demographic information
	Health and lifestyle factors (e.g. smoking, BMI)
Qualitative	Semi-structured interviews with Newson Health staff, patients, women from the general population, and loved ones of menopausal women

Quantitative Methods

In this study, the quantitative methods included self-report questionnaires completed by patients of Newson Health before their first consultation at the clinic, at first follow-up (two to six months after baseline), and second follow-up (up to one year after baseline). The Peri-Menopausal Depression Scale (MENO-D; Kulkarni et al., 2018) and the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) were provided for self-completion online. Alongside these, demographic data and measures routinely collected by Newson Health were included to provide a comprehensive understanding of participants' profiles and experiences, and how they changed over time. The questionnaires in this study provided details about patients' psychological symptoms during menopause, including a measure of suicidality. The demographics collected provided further health context, capturing information on alcohol use, current and previous mental health diagnoses, medication use and dosages (including HRT), as well as histories of premenstrual syndrome, premenstrual dysphoric disorder, and postnatal depression. These factors offered insight into hormonal influences, pre-existing vulnerabilities, and behavioural patterns that may have contributed to suicidality during menopause.

The questionnaire design process was highly collaborative, involving regular consultations with data analysts, clinicians, and menopause specialists at Newson Health. Meetings were held continuously throughout the study to review initial data trends, ensuring that the questionnaire captured the most relevant indicators for suicide prevention and mental health outcomes. This iterative process also helped refine the questionnaire's structure, ensuring it was accessible and easy for patients to complete while aligning with routine clinical practice. Special attention was given to ensuring that key aspects of suicidality, anxiety, and mood fluctuations were adequately measured, as these were critical to the study's aims. The MMQ was administered as part of patients' routine clinical assessments at Newson Health, with participants completing the questionnaire either remotely via an online platform or in-person during appointments. This approach maximised accessibility and allowed for the longitudinal tracking of mental health symptoms over time, providing insights into how menopause-related mood disturbances evolved in response to treatment and other external factors.

In research contexts, questionnaires are an invaluable tool, offering systematic and efficient methods for assessing psychological variables. They enable researchers to collect data from large populations in a cost-effective and time-efficient manner (Grandjean et al., 2025), and they are the most popular methods for measuring mental health status at present (Hwang & Oh, 2014). Regarding suicide research, there is some evidence to suggest that individuals may be more likely to report suicidal ideation on self-report measures such as questionnaires compared to face-to-face interviews (Beck et al., 1988; Kaplan et al., 1994). Additionally, these measures can effectively track trends over time (Posner et al., 2011). More recently, there have also been many quantitative surveys used successfully in menopause research (Harper et al., 2022; Reisel et al., 2024), including from organisations such as the British Medical Association (2020), UK Parliament (Women and Equalities Committee, 2022), and Police Federation of England and Wales (2024).

Questionnaires, however, come with potential limitations, particularly when participants are required to recall past feelings and experiences, which can result in inaccuracies in self-reported data (Tourangeau et al., 2000). This issue is especially significant when exploring active mental health symptoms such as depression, as depression is often

associated with various forms of cognitive impairment, including forgetfulness (Dillon & Pizzagalli, 2018). Additionally, when using questionnaires longitudinally in healthcare settings, high dropout rates can occur as individuals discontinue their use of the service which can impair the statistical power of the study (Schafer & Graham, 2002).

The MENO-D was specifically designed to assess depressive symptoms unique to the menopausal transition, addressing limitations in general depression scales that may overlook menopause-related mood disturbances. It evaluates the interplay between hormonal changes and psychological symptoms, making it a precise tool for this population. Kulkarni et al. (2018) validated the MENO-D through rigorous psychometric testing, identifying five key subscales: somatic symptoms, cognitive difficulties, self-perception issues, sleep disturbances, and sexual dysfunction. The study demonstrated high internal consistency (Cronbach's alpha > 0.80) and strong construct validity, confirming its effectiveness in capturing the unique psychological challenges of menopause, which establishes the MENO-D as an essential tool for assessing menopause-related depression and its potential role in suicidality (Kulkarni et al., 2018).

The PHQ-9 is a widely validated self-report measure of depression that includes a suicidality screening item (Item 9) assessing thoughts of self-harm or death by suicide. A study comparing PHQ-9 Item 9 with the Columbia Suicide Severity Rating Scale (C-SSRS) found it had high sensitivity (87.6%) in detecting suicide risk but lower specificity (66.1%), meaning it may overestimate risk in some cases (Na et al., 2018), however, its high negative predictive value (97.2%) makes it an effective tool for ruling out suicidality. The PHQ-9 has also been validated in diverse populations, including women experiencing hormonal changes, with studies confirming its strong factor structure, internal consistency, and criterion validity, making it a reliable tool for assessing suicidal ideation in menopausal women (Zhong et al., 2014).

Importantly, the MENO-D allows for the identification of suicidality (Section D), where the most severe response option reflects experiences of suicidal thoughts, even though suicidality is not explicitly mentioned in the question itself. The PHQ-9 also has an item focused specifically on suicidality ("Over the past two weeks, how often have you had thoughts that you would be better off dead, or thoughts of hurting yourself in some way?"), which has been widely used and validated as a single-item measure of suicidality

(Louzon et al., 2016; Na et el., 2018; Rossom et al., 2017). While the MENO-D has been validated as an entire scale, section D, which focuses on suicidality and self-harm, has not yet been validated to be used as an individual variable.

Qualitative Methods

Semi-structured interviews were employed in this thesis to examine perspectives and experiences of mental health during menopause. Interviews are among the most widely used methods of data collection in qualitative research and can take various forms, including structured, semi-structured, and unstructured formats (Minhat, 2015).

Qualitative research broadly offers four primary approaches: interviews, observations, documentation, and the analysis of artefacts (Creswell & Creswell, 2017). Among these, interviews offer several distinct advantages. Firstly, compared to observational methods, interviews can quickly provide focused and detailed data on specific topics of interest (Schulze & Avital, 2011). In this thesis, observational methods were not practical due to logistical constraints, as the clinic's significant distance made it infeasible to conduct a large number of interviews on-site. Additionally, the interactive nature of interviews provides the flexibility to tailor approaches and questions based on the interviewee and context. Unlike methods such as documentation or entirely unstructured interviews, semi-structured interviews enabled the researcher to clarify responses and delve deeper into specific points, thereby enriching the detail and relevance of the data collected.

Structured interviews are often likened to 'verbal questionnaires', as they involve a set of predetermined, closed questions delivered in a fixed order and require dichotomous (e.g. yes or no) answers. However, while they are effective in ensuring consistency, they are the least commonly used format in qualitative research due to their rigid structure. (Blandford, 2013). In contrast, unstructured interviews are highly open-ended, typically focused on one or two core topics, with questions evolving naturally based on the interviewee's responses (Blandford, 2013), typically differing from interview to interview. Thirdly, semi-structured interviews strike a balance between these two approaches, combining a flexible framework of pre-determined open-ended questions with the

adaptability to explore topics introduced by the interviewee in greater depth (Blandford, 2013).

For this research, semi-structured interviews were chosen due to their flexibility, allowing the interview schedule to be tailored to the varying intensity of participants' experiences with mental health and suicidality during menopause, which is an adaptability that a structured format could not provide. Additionally, semi-structured interviews make it easier to delve deeply into personal and sensitive issues (DeJonckheere & Vaughn, 2019), making them particularly appropriate for this research. Unstructured interviews were also deemed unsuitable for this study, as ensuring the appropriateness and sensitivity of the content for participants required some level of pre-prepared planning and structure.

Interviews are often regarded as the 'gold standard' in qualitative research (Oltmann, 2016), however, they are not without challenges. Organising interviews, as well as transcribing, coding, and analysing the data, can be both time-consuming and resource-intensive. Additionally, as interviews rely on building rapport, which fosters trust and impacts the quality of data collected, the interviewer's skills and expertise are crucial (Guba & Lincoln, 1994), requiring abilities such as demonstrating interest, empathy, and maintaining and non-judgemental approach (Braun & Clarke, 2013). Distractions, interruptions, and the difficulty of addressing sensitive or awkward questions can further complicate the process of interviewing and can influence the depth and amount of information shared by interviewees (Bolderston, 2012; Britten, 1995). There may also be an added pressure or temptation to counsel interviewees, particularly when discussing sensitive mental health topics, which can lead to blurred boundaries between interviewer and interviewee (Field & Morse, 1989). Despite these barriers, semi-structured interviews were considered the most appropriate method for this study, offering a balance of structure and flexibility that better suited the research objectives compared to structured or unstructured interviews.

Reflective Note.

Conducting qualitative interviews was initially challenging for me, largely due to my previous experience working clinically in primary and secondary care mental health

services. In those roles, my responsibilities involved formulating problems, providing advice, and implementing therapeutic interventions, often for individuals experiencing suicidality. I was accustomed to engaging in safety planning, developing risk management strategies, and directly supporting vulnerable patients in a therapy setting. Transitioning into the researcher role, and interviewing vulnerable individuals, required a significant shift in mindset, as my primary task now was to ask questions and gather information, not to offer advice or intervene in any way.

At the start, it was difficult to step back from the urge to address the psychological concerns raised during interviews, particularly when participants discussed issues they were currently having regarding their mental health. I had to continually remind myself that my role was no longer clinical and that any risk disclosures needed to be escalated rather than tackled directly by myself. This adjustment was not easy, as my instinctive reaction was to provide immediate support, which had been a core aspect of my previous roles.

However, I believe my clinical background ultimately proved to be an asset in conducting interviews, as my past experience working one-on-one with vulnerable individuals enabled me to build rapport quickly and navigate sensitive topics with empathy and professionalism. The skills I had developed due to my job history were invaluable in building understanding and developing a safe space for participants to share their experiences, as these were practices I was well-versed in.

The journey of adjustment not only enhanced my interview technique but also deepened my understanding of the unique demands of qualitative research, reinforcing the importance of staying mindful of my role as a researcher throughout the process.

Triangulation

Triangulation, originally a navigation term, refers to the process of determining an unknown location by using multiple reference points (Arias Valencia, 2022). Similarly, in research, it involves integrating data from multiple sources to explore and confirm a singular phenomenon (Flick, 2017). This synthesis can occur across researchers, data sources, and methodologies; for example, data can be gathered using the same

approach (e.g. quantitative data) or by combining different methodologies, such as quantitative and qualitative methods (Williamson, 2005). The primary aim of triangulation is to enhance the validity and reliability of the inferences drawn from the data (Heale & Forbes, 2013), creating a more comprehensive approach to addressing the research question (Arias Valencia, 2022).

This thesis employed an extended conceptualisation of triangulation (Flick, 2017), incorporating data, methodological, and investigator triangulation to strengthen the research process. Data triangulation was achieved by collecting information from diverse sources, including symptom questionnaires, demographic surveys, and qualitative interviews. Methodological triangulation involved using various data analysis methods, such as descriptive analysis, inferential statistics, systematic reviews, and reflective thematic analysis, providing a multifaceted understanding of the research questions. Investigator triangulation played a particularly significant role in the qualitative analysis. Two researchers (the primary author and PS) collaboratively reviewed the codes and themes derived from the qualitative data, while the remaining supervisory team (JCM and AR) served as external auditors; a process that ensured the trustworthiness of findings by preventing undue influence from the primary researchers' perspectives (Rose & Johnson, 2020). The supervisory team's diverse expertise in both quantitative and qualitative methods further supported the triangulation process, enriching the analysis and strengthening the credibility of conclusions.

Outline of Study Methodologies

This thesis consists of four studies designed to address the identified gaps in the literature. Each study is presented in a format that aligns with the publishing guidelines of the journal in which it is either published or under review for publication.

Menopause and Suicide: A Systematic Review

Chapter 3 was a systematic review aimed to explore the relationship between menopause, mental health, and suicidality and identify gaps in the literature. A protocol

was developed and registered with PROSPERO (ID: CRD42023475768), available from: crd.york.ac.uk/PROSPERO/display_record.php?RecordID=475768.

Search terms were developed through scoping the existing literature and were used to search five electronic databases (MedLine, CINAHL, PsycINFO, Web of Science, and Cochrane Library) from inception to November 2023, with an updated search conducted in January 2024. Key concepts included “suicide”, “self-harm”, and “menopause”, and searches were supplemented by manually reviewing references in eligible studies. A data extraction sheet was created to collect information relevant to the review’s aims, including study characteristics (e.g. design, location, sample size), outcomes such as suicidality (suicidal ideation, attempts and completion), and self-harm (non-suicidal self-injury). The methodological quality of studies was assessed using the Mixed Methods Appraisal Tool (MMAT).

A narrative synthesis approach was employed to summarise the findings, as the included studies exhibited heterogeneity in design, populations, and outcomes. This method facilitated the identification of patterns, relationships, and variations between menopausal symptoms, mental health challenges, and suicidality. Insights regarding gaps in healthcare provisions, the interplay of hormonal and psychological factors, and the implications for improving menopause care were considered.

Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort

This chapter reports a quantitative study aimed at exploring and evaluating changes in psychological outcomes for women accessing menopause care, investigating differences between hormonal and clinical depression, and exploring the impact of treatments, particularly HRT, on mental health and suicidality.

The study utilised data from 966 women attending Newson Health Menopause and Wellbeing Centre between 2023 and 2025. Participants completed the Peri-menopausal Depression Scale (MENO-D; Kulkarni et al., 2018) and the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), which includes a measure of suicidality, at three time points: initial consultation, 2-6 months, and 9-12 months. Alongside these

questionnaires, demographic, health and lifestyle, and clinic information was collected, including medication use and dosage (including HRT), and previous mental or hormonal health diagnoses.

Data were analysed using IBM SPSS Statistics (version 29). Descriptive statistics were used to summarise the frequency of HRT types and the prevalence of suicidal ideation at each time point. Pearson correlations examined associations between PHQ-9 and MENO-D total scores, their key items (PHQ-9 item 9 for suicidality and MENO-D item 4 for self-worth as a proxy for suicidality), and relevant clinical and lifestyle variables including Body Mass Index (BMI), smoking status, and antidepressant use. Covariates were included in the main analyses only where a significant bivariate association with the outcome was identified, in line with a theoretically informed and data-driven approach to minimise overfitting. Antidepressant use was significantly associated with all four mental health outcomes and was included in all models; BMI and smoking were selectively included based on outcome-specific relevance.

A series of mixed-design ANOVAs were conducted to assess changes in PHQ-9 total score (general depression), PHQ-9 item 9 (suicidality), MENO-D total score (menopause-related psychological distress), and MENO-D item 4 (self-worth) over time, and whether these changes differed across HRT treatment groups. Covariates included in all relevant models were time between appointments, baseline HRT use, and baseline suicidality, to control for variability in follow-up timing, prior hormone exposure, and initial symptom severity, respectively. Exploratory subgroup analyses used repeated-measures ANOVAs to investigate whether baseline HRT use influenced changes in psychological outcomes. Additionally, paired samples t-tests were conducted for participants reporting no suicidal ideation at baseline (PHQ-9 item 9 score = 0) to examine the emergence of new-onset suicidality, with analyses stratified by baseline HRT use.

Because PHQ-9 item 9 was highly skewed with responses clustered at the lower end of the scale, the variable was recoded into a binary format (0 = no suicidal ideation, 1 = suicidal ideation). Given this transformation and the violation of normality assumptions required for ANOVA, a supplementary binary logistic regression analysis was performed. This model included the same covariates as the ANOVA (antidepressant use, baseline HRT status, baseline suicidality, and time between appointments) to test whether HRT

regimen predicted suicidality at follow-up. Both analyses were retained to provide complementary perspectives; ANOVA capturing mean changes over time and logistic regression verifying model robustness and predictors of persistent suicidality.

The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study

Chapter 5 is a qualitative exploration of women's experiences during perimenopause and menopause, with a focus on mental health challenges, including suicidality. Issues of suicidality and potential mediating and protective factors have not been adequately examined in existing research. The current study recruited 42 women, including 17 patients from Newson Health Menopause and Wellbeing Centre, and 25 women from the general population via social media. Semi-structured interviews (n = 42) were conducted online to ensure accessibility and flexibility for participants, with the interview schedule focusing on women's general experiences of menopause, interactions with healthcare, support for managing suicidal ideation, and reflections on external support. All interviews were transcribed verbatim and analysed using Braun and Clarke's reflexive analysis thematic framework (2021).

Thematic analysis involves the researcher's active engagement with the data to identify, analyse, and report patterns or themes (Braun & Clarke, 2021). This method was chosen due to its flexibility, allowing for both inductive (data-driven) and deductive (theory-driven) coding to refine and define themes, which aligned with the exploratory aims of the study (Braun & Clarke, 2018). Other qualitative methods were considered unsuitable for this study; for instance, grounded theory was not appropriate as the study's aims were not related to developing a theory of a singular phenomenon, and interpretative analysis was deemed inappropriate because the focus of the study was not on how individuals interpret and make sense of their experiences, but rather on broader patterns and themes across participants. It was particularly appropriate for capturing the nuanced experiences of participants while maintaining accessibility for dissemination beyond academic audiences (Braun & Clarke, 2006).

Codes and themes were independently developed by the researcher and subsequently reviewed by the supervisory team to ensure rigour, transparency, and consensus; an approach that facilitated a more precise understanding of women's mental health challenges during menopause.

Understanding the Experiences of Carers Supporting Menopausal Women with Mental Health Challenges: A Qualitative Study

Chapter 6 also utilised a qualitative design to explore the experiences of carers – both menopause healthcare professionals (MHCPs) and loved ones – supporting menopausal women facing severe mental health symptoms – including suicidality. Although scarce, previous research has focused on women's experiences, with limited attention being given to the perspectives of those who provide critical support. To address this gap, and to complement and reinforce the findings from the initial qualitative study on women's experiences, the study recruited 28 participants, including 19 MHCPs from Newson Health Menopause and Wellbeing Centre, and nine loved ones of menopausal women such as husbands and close friends. Semi-structured interviews were conducted online, with the interview schedule focusing on topics such as challenges in navigating suicidality, interactions with healthcare, and insights for improving menopause care.

Data were analysed using reflexive thematic analysis (Braun & Clarke, 2021), and the same process as the initial qualitative study was executed.

Ethical Considerations

Ethical approval was sought and granted from the Liverpool John Moores University (LJMU) Research Ethics Committee for each study comprising this PhD (LJMU ID: 22/PSY/080).

To ensure confidentiality of patient medical information for the quantitative component, data were accessed and extracted by a clinic research associate at Newson Health, before being anonymised and provided to researchers in a password-protected Excel spreadsheet. All data were fully non-identifiable; however, to enable longitudinal

analysis, individual data were assigned unique codes, allowing results to be linked across different time points while maintaining participant anonymity. Only patients who had ticked “Yes” to the consent statement at the end of their first MMQ agreeing to anonymised use of their responses for ethically approved research were included in the dataset. This consent status was confirmed by the clinic research associate at Newson Health prior to data extraction.

For the qualitative component, fully informed verbal consent was obtained from all participants before interviews commenced (see Appendix 3). Interested participants were provided with a detailed participant information sheet outlining the study’s purpose, aims, withdrawal rights, and limits to confidentiality (Appendix 4). Participants had the opportunity to ask questions prior to participation, and a standardised blurb was read to each participant before the interview, explaining key aspects of the study, their rights, and how their data (e.g. audio recordings and quotations) would be used (see Appendix 5).

Given the sensitive nature of the research, which involved discussions of suicidal thoughts and behaviours, steps were taken to minimise distress. Questions were worded thoughtfully with input from the PPI group, and the researcher remained vigilant for signs of distress, reminding participants they could pause or stop at any time. For particularly vulnerable participants identified by the researcher as being at immediate risk, Newson Health offered a pro bono session with one of their available GPs. All personal and identifiable information shared during the interviews was handled only by the research team and anonymised at the earliest opportunity. Participants were given a unique code to facilitate the inclusion of a diverse range of quotes from different participants in the results of the study. Recordings were securely stored electronically on LJMU’s OneDrive, which requires multi-factor authentication, and only anonymised and aggregate data, including direct quotations, were used in publications.

Steps were also taken to minimise potential harm to the researcher. Box 2 provides a summary of measures implemented before, during, and after interviews to support researcher well-being.

Box 2. Procedures to Minimise Risk of Harm to the Researcher.

Prior to Interviews: - Exclude any interviewees that were not fully comfortable to participate in the study.
During the Interviews: **-** Be prepared to pause or terminate the interview if the participant is significantly emotionally affected by the topics discussed.
Following the Interviews: - Debrief with Director of Studies (PS). - Attend regular supervision sessions.

Reflective Note.

Undertaking a PhD is inherently emotionally demanding, and researching a topic as sensitive as suicide further intensifies this. Because of this, I had to proactively address the emotional demands of my work and implement strategies to mitigate potential negative impacts on my own well-being. To support myself, I incorporate structured self-care practices into the research process and held space to acknowledge and process my emotions.

One key strategy was spacing out qualitative interviews and limiting myself to a maximum of three per day; a decision that stemmed from my previous experience in the NHS, where conducting six to seven sessions with patients daily led to burnout. I wanted to avoid repeating this experience and ensure that I could give each participant my full focus and respect, particularly given the gravity of the topics discussed.

Another challenge I faced during interviews was managing my frustration when hearing accounts of the mistreatment and invalidation women experienced in menopause care. As a woman myself, I could empathise with these stories, and at times, it felt disheartening to hear of the persistence of these systemic issues in older generations. To manage this, I arranged for debriefs with my supervisor (PS) or fellow PhD students after particularly difficult or triggering interviews, which allowed me to process my feelings constructively. Additionally, I often discussed the broader topic with female friends which fostered a sense of shared understanding and community, and provided comfort and

renewed hope, helping me stay grounded and focused on the bigger picture: the importance of this research.

Chapter Summary

This chapter outlines the conceptual framework, methodological approaches, and rationale for mixed-methods investigation into the relationship between menopause, mental health, and suicidality. The adoption of a pragmatic mixed-methods design is discussed and justified, emphasising the integration of qualitative and quantitative methods to address the complex and multifaceted nature of the research questions. The process of choosing, developing, and administering the quantitative and qualitative measures is detailed, along with relevant descriptions and validations. Key ethical considerations, including safe PPI involvement, participant confidentiality and researcher well-being are detailed, alongside reflections on the challenges of conducting sensitive research. The four original studies that comprise this thesis are described in terms of their rationale, aims, and methodological justifications, providing a comprehensive overview of the approaches used to explore suicidality during menopause, and the experiences of all those involved.

Chapter 3: Menopause and Suicide: A Systematic Review

This chapter presents the first known systematic review to comprehensively synthesise the evidence on suicidality during the menopausal transition. This chapter presents the first known systematic review to comprehensively synthesise the evidence on suicidality during the menopausal transition, with a specific focus on underexplored domains such as early menopause and primary ovarian insufficiency (POI), cultural and ethnic contexts, and comorbid physical health conditions, including high BMI. By extending the scope of previous reviews, such as Martin-Key et al. (2024), this chapter offers a more nuanced and integrative analysis of the biological, social, and physical health factors that shape suicidality in midlife women and highlights implications for culturally competent and integrated models of care.

Although midlife women are known to be at increased risk of suicide, the specific role of hormonal transition phases has historically been under-explored within suicidology. Existing literature is often fragmented, focusing either on general mental health or using broad age ranges without clearly distinguishing menopausal staging. This chapter addresses that gap by critically examining the association between menopause and suicidality, and identifying hormonal, psychosocial, and sociocultural factors contributing to increased suicide risk. In doing so, it establishes the conceptual and empirical groundwork for the thesis' subsequent qualitative and quantitative analyses, which further investigate how suicidality emerges, is experienced, and is treated during the menopausal transition.

While midlife women are known to be at elevated risk of suicide, the specific role of hormonal transition phases, particularly perimenopause, remains insufficiently theorised and poorly integrated into mainstream suicidology. Existing literature often fails to distinguish menopausal staging, conflates suicidality with general mood disturbance, or omits sociocultural and physical health variables altogether. To inform the development of more contextually grounded understandings of menopausal suicidality, this chapter undertakes a systematic review of international research on suicidality across the menopausal transition. This review was not conducted purely as a standalone exercise, but as a critical foundation for the thesis as a whole: it maps existing knowledge, identifies key conceptual and methodological gaps, and informs the direction and design

of the subsequent empirical chapters. Specifically, it helps to clarify where suicidality has been under-theorised, mismeasured, or overlooked; issues that the qualitative and quantitative studies in this thesis seek to explore in greater depth. This chapter provides a crucial foundation for the thesis, justifying the need for both the subsequent empirical studies and for greater integration of menopause-specific considerations into suicidality research and prevention.

Note: The manuscript has been submitted for peer-reviewed publication at Women's Health and is currently under revision following reviewer feedback; it is presented here in accordance with the journal's formatting and submission guidelines.

Menopause and Suicide: A Systematic Review

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Ethics and consent

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013. All procedures involving patients were approved by Liverpool John Moores University Research Ethics Committee (LJMU REC ID: 22/PSY/080), and all participants provided informed verbal consent prior to enrolment in the study.

Author note

The ideas and data appearing in the manuscript have not been disseminated before.

ABSTRACT

Background

The menopausal transition is a critical phase in a woman's life marked by hormonal fluctuations that can result in a wide variety of physical and psychological symptoms. These symptoms vary in strength and their negative impacts on women's health and well-being. One of the most severe impacts of (peri)menopause is increased vulnerability to suicidality in some women, yet no systematic review has examined the holistic relationship regarding this potential link.

Objectives

To examine the relationship between the menopausal transition and suicidality, and identify menopause-related factors contributing to increased suicide risk.

Design

A systematic review conducted in accordance with PRISMA guidelines.

Data Sources

MedLine, CINAHL, PsychINFO, Web of Science, and Cochrane Library were searched for studies addressing both menopause and suicidality. Studies were screened independently by two reviewers. Data extraction focused on suicidal ideation, attempts, and completed suicide among menopausal women. The quality of included studies was assessed using the Mixed Methods Appraisal Tool (MMAT).

Results

Nineteen studies published between 1987 and 2025 met the inclusion criteria. Of the 19 studies, 16 (84%) reported an association between the menopausal transition and increased suicidality, with seven studies specifically noting this association in perimenopausal women. Hormonal changes, pre-existing mental health conditions, physical symptoms, and limited social support emerged as key factors associated with increased suicide risk. Three studies did not find a significant link.

Conclusion

There is some evidence of an association between the menopausal transition and suicidality, particularly during perimenopause, though conclusions are limited by study

design and heterogeneity. The review highlights the importance of integrating mental health support within menopause care and suggests further research to clarify the mechanisms underpinning suicide risk during the menopausal transition. Enhanced screening and supportive interventions may benefit menopausal women experiencing suicidality.

Keywords: menopause, suicidality, mental health, hormones

INTRODUCTION

The menopausal transition is a significant, mutable phase in a woman's life which typically occurs between the ages of 45 and 55 and marks the termination of menstrual activity, covering shifts from pre-, peri-, and post-menopause (World Health Organisation [WHO], 2024). This transition is characterised by fluctuating levels of steroid hormones such as oestrogen, testosterone, and progesterone, which may lead to various physiological and psychological changes of differing severity (Glaser & Dimitrakakis, 2013; Maki et al., 2019; Santoro et al., 2015). Common physiological symptoms can include hot flashes and night sweats, which can affect up to 75% of menopausal women and may persist for several years (Santoro et al., 2015). These can sometimes cause further, more acute vasomotor symptoms such as full-body chills and heart palpitations, substantially disrupting routine activities including sleep (Freeman et al., 2004). Additionally, oestrogen loss can reduce bone density, increasing the risk of osteoporosis and bone fractures (Santen et al., 2010). Disruptions such as these can contribute to irritability, fatigue, and overall daily discomfort, impacting quality of life, which may exacerbate existing mental health concerns or lead to the development of new ones (Freeman et al., 2006).

The hormonal fluctuations that occur during the menopausal transition can lead to a range of cognitive and psychological symptoms such as memory lapses, difficulty concentrating, mood swings, anxiety, low mood, and reduced libido (Gava et al., 2019; Greendale et al., 2009; Leventhal, 2000). Systematic reviews and meta-analyses exploring mental health issues during menopause have found that women are more vulnerable to both anxiety and depression (Ablooshi et al., 2023; de Kruif et al., 2016; Jia et al., 2024; Llaneza et al., 2012; Vivian-Taylor & Hickey et al., 2014). This is particularly evident in perimenopause (the few years leading up to the cessation of menstrual periods when vasomotor symptoms begin and changes in the menstrual cycle occur (National Institute for Health and Care Excellence [NICE], 2024) and, less severely, in early postmenopause (the few years after menopause) where hormonal fluctuations are more pronounced (Freeman et al., 2006; Bromberger et al., 2011). These fluctuations, specifically the decline in oestrogen and progesterone, can have a significant impact on brain chemistry as they both play important roles in the regulation of neurotransmitters

such as serotonin and norepinephrine, which are necessary for mood stabilisation (Soares et al., 2001). Studies have shown that decreased oestrogen levels during the menopausal transition are associated with a higher prevalence of anxiety (Vivian-Taylor & Hickey, 2014), depressive symptoms and major depressive episodes, particularly in women with a history of depression (Freeman et al., 2006; Chen et al., 2013). Additionally, oestrogen replacement therapy can be effective in alleviating depression and anxiety symptoms during menopause, further supporting the posited role of oestrogen in mood regulation (Schmidt et al., 2015).

Overall, research suggests that the interaction between menopausal physiological symptoms and psychological distress can cause a decline in mental well-being. A 2021 survey revealed that 86% of women aged 46-60 reported experiencing mental health issues during menopause; 58% reported low energy and lack of motivation, 53% suffered from low mood and depression, 50% experienced anxiety, 42% reported anger and mood swings, and 33% expressed feelings of worthlessness (Health & Her, 2021). Despite this clear impact of the menopausal transition on mental ill-health for a significant number of women, suicidality during menopause has received relatively little attention. Yet, suicide generally is a major public health concern. According to the WHO (2024), more than 700,000 people die by suicide each year, with women showing different patterns and predictors compared to men. In general, women are three times more likely to attempt suicide than men (Tsirigotis et al., 2011), however, suicide research traditionally focuses on the mortality of suicidal behaviours which typically favours men, who die from suicide two to four times more than women (Akinyemi et al., 2023). Compared to men, women face unique risk factors for suicide including a higher prevalence of psychosocial issues (e.g. domestic violence, physical, emotional, and sexual abuse, lower levels of education, single marital status, and financial instability (de la Garza et al., 2021; Olfson et al., 2017). Women also tend to be more vulnerable to these stressors and experience a higher incidence of mental health disorders (Vijayakumar, 2015).

In 2023, the age-specific female suicide rate in the U.K. was its highest since 1994 and most severe among women aged 45 to 64 (Office for National Statistics [ONS], 2024). Similar findings have been reported in the USA and Australia (Centers for Disease

Control and Prevention [CDC], 2022; Australian Bureau of Statistics, 2022). These age ranges coincide with stages of menopause, and some have suggested that the biological changes and negative symptomatology associated with this transition may contribute to increased suicide risk (Kulkarni, 2018). However, this relationship is likely to be complex (Maki et al., 2019), with multiple potential exacerbating factors, such as treatment delays and absence of social support (The Fawcett Society, 2022; Nakanishi et al., 2023), contributing to an increased risk of suicidal ideation and suicidal behaviours (Monteleone et al., 2018).

Globally, there are calls for more women-specific health research and there is a growing recognition that the menopausal transition can increase the risk of significant mental and physical health harms (Woods, 1994). However, there is no synthesised evidence regarding the potential association between menopause and suicidality while accounting for the complex interplay of biological, psychosocial, cultural, and intersectional factors. A previous systematic review by Martin-Key and colleagues (2024) synthesised 28 studies and offered important insights into the relationship between menopause and suicidality. However, it did not fully explore how cultural and ethnic contexts, early menopause (including primary ovarian insufficiency), and comorbid physical health conditions influence this relationship. Therefore, this systematic review aims to build on and extend that work by addressing these gaps. Specifically, it synthesises existing research on menopause and suicidality, with a particular focus on early menopause, cultural influences, comorbidities, and implications for integrated care approaches in clinical practice.

METHOD

Protocol

The protocol was registered with International Prospective Register of Systematic Reviews (PROSPERO) ID: CRD42023475768. Available from: crd.york.ac.uk/PROSPERO/display_record.php?RecordID=475768

Search Strategy

The reporting of this systematic review conforms to the PRISMA 2020 statement (Page et al., 2021) and checklist (see Figure 1). Electronic databases were searched from inception to 21.11.23 (with updated searches conducted in January 2024 and April 2025): (MedLine, CINAHL, PsycINFO, Web of Science and Cochrane Library) for two key concepts: (1) suicide and self-harm and (2) menopause. Formal electronic searches were supplemented by a manual search of reference sections in eligible papers and review articles. Search terms involved a combination of free text and indexing terms (e.g. MeSH).

Eligibility Criteria

Studies were included if they reported data on people experiencing the menopausal transition, with a clearly described measure of suicide, suicidality, or self-harm. Suicidality encompassed suicidal ideation, suicide attempts, and completed suicide, while self-harm was defined as any intentional self-injury, regardless of suicidal intent. Outcome variables were identified using relevant literature and included suicidal ideation, suicide attempts, completed suicide, and associated psychological and physical health outcomes. The specific eligibility criteria for the included studies are outlined in Table 1.

Table 1. Inclusion and exclusion criteria.

Inclusion criteria **Population(s) and condition of interest**	**Population(s):** actively menopausal women (i.e. perimenopausal and still experiencing menstrual periods). **Condition of interest:** suicidal ideation, self-harm, suicide attempt.
Intervention(s)/Exposure	Actively menopausal women experiencing suicidal behaviours and/or thoughts, and/or non-suicidal self-injury.
Comparators	None.
Outcome	Factors influencing suicidality in actively menopausal women, such as HRT, mental health support, and lifestyle factors.
Setting	None.
Study designs	Qualitative, mixed methods, randomised controlled trials, and non-randomised quantitative studies.
Exclusion criteria	Non-English language studies where translation could not be obtained. Studies reporting solely on general mental health without a mention of suicidality. Studies focused solely outside of the active menopausal period (e.g. premenopausal or postmenopausal women).

Study Screening and Selection

Two authors (LH and LS) independently reviewed titles, abstracts, and full texts against the eligibility criteria. Discrepancies were resolved through discussion. There was high agreement between authors on inclusion/exclusion decisions (85%), with a kappa value of 0.77, indicating substantial agreement between raters (Landis & Koch, 1977).

Data Extraction and Quality Assessment

Eligible full texts were subjected to data extraction and quality assessment by the primary author. For data extraction, we systematically gathered information on suicidality outcomes (including suicidal ideation, suicide attempts, and suicide deaths), menopausal stage (pre-, peri-, or post-menopause), and participant characteristics (e.g., age, ethnicity). Additional data extracted included physical health comorbidities (e.g., BMI, metabolic status), study design, setting, and funding sources when available. When data were unclear or not explicitly stated in the original study reports, we did not make assumptions and recorded these as not reported.

The Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) was used to assess methodological quality of included studies (Pace et al., 2012; Pluye, Gagnon, Griffiths, & Johnson-Lafleur, 2009). All studies found in the review were included in data synthesis, regardless of risk of bias/quality assessment. Studies were scored based on how rigorously they applied appropriate methods within their respective design categories. While cross-sectional studies have inherent limitations, such as the inability to infer causality, the MMAT permits these to be rated as high quality when they demonstrate methodological rigour in sampling, measurement, and analysis (Pace et al., 2012; Souto et al., 2015). This approach is supported by broader evidence that well-conducted cross-sectional studies can be assessed as methodologically sound within their scope (Moskalewicz & Oremus, 2020; Wirsching et al., 2018).

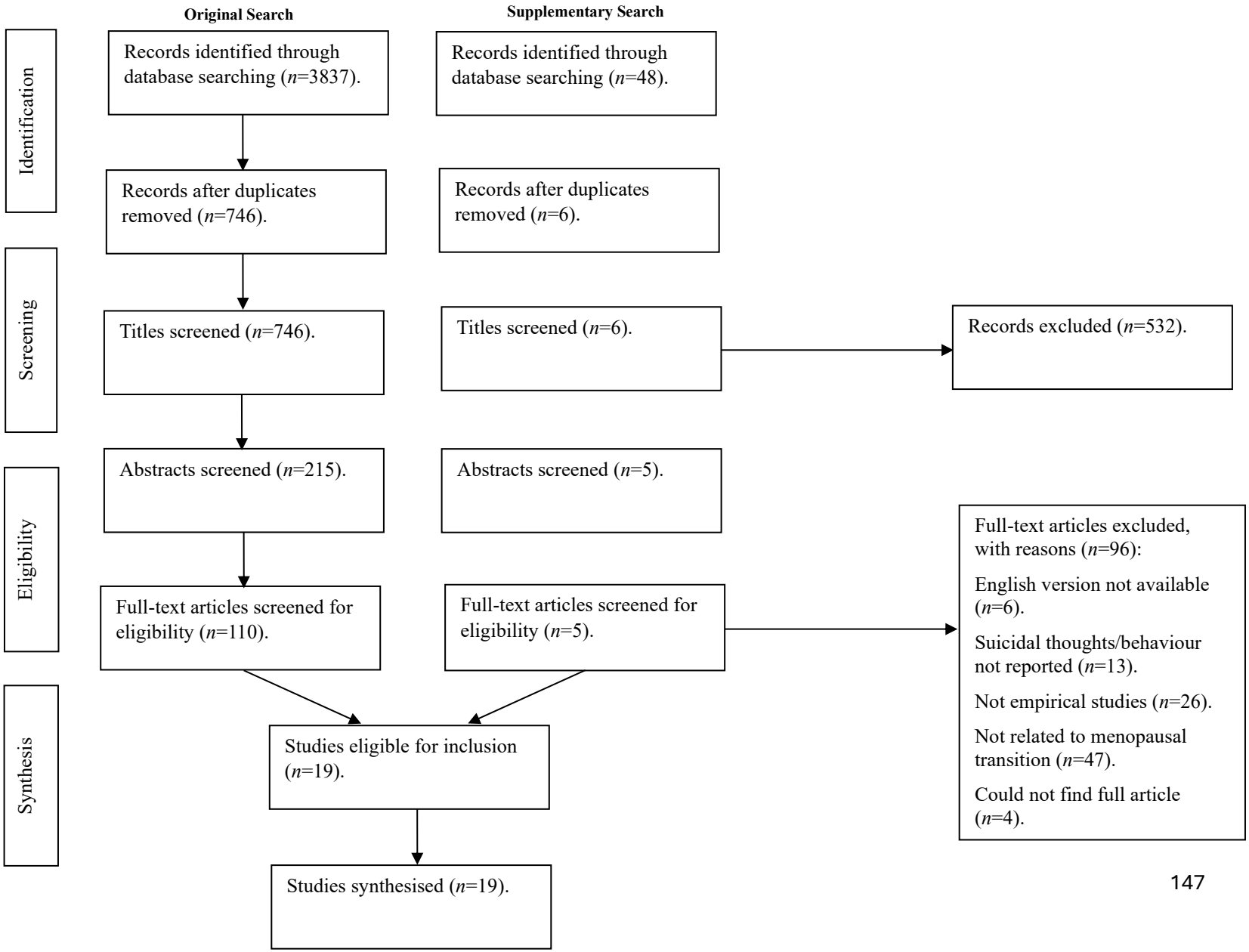
Data Synthesis

Narrative synthesis using the framework developed by Popay et al. (2006) was conducted. This is a method for synthesising findings from multiple studies in a systematic review, particularly when quantitative meta-analysis is not feasible due to the heterogeneity in study designs, populations, or outcomes. It provides a structured synthesis of the findings, using descriptions and themes to summarise patterns, relationships, and variations across studies. Given this heterogeneity, a segmented synthesis approach was used conceptually: while all studies were included in a unified summary table for clarity, findings from quantitative, qualitative, and mixed-methods studies were interpreted within their respective methodological contexts to maintain conceptual clarity and avoid conflating statistical associations with thematic insights. This approach allowed for meaningful interpretation across diverse forms of evidence. Given the complexity of the topic, narrative synthesis was particularly well suited to exploring how menopausal symptoms, mental health, and suicidality intersect, while also incorporating the contextual depth offered by qualitative findings. The relationships within and across studies were explored by examining the similarities and differences between them (see supplementary Table 1). This approach has been used successfully in similar mental health and suicidality reviews where diverse study designs were included (Abbate et al., 2024; Carden et al., 2020; McCarthy et al., 2024). This process followed a transparent and systematic review framework consistent with PRISMA and established guidance for narrative synthesis (Popay et al., 2006), ensuring a comprehensive and rigorous integration of the included evidence.

RESULTS

The search yielded 3837 records from which 746 citations were screened. After titles were screened, 215 abstracts were screened. One hundred and ten full texts were reviewed for eligibility and 17 studies were included in the final synthesis. An additional manual search in April 2025 identified two further eligible studies not retrieved in the original database search. These were included following full-text screening. Figure 1 outlines the screening procedure.

Figure 1. PRISMA flow diagram showing the flow of studies within the review.



Study Characteristics

Included studies involved a range of premenopausal women, (defined as having regular menstrual periods younger than 40 years, younger than 45 years, or not having started the menopausal transition), perimenopausal (defined as the onset of menopause symptoms lasting until the cessation of menstruation, women aged 45 to 55 years, having irregular menstrual periods, cessation of periods permanently for less than one year, aged over 40 years, or currently experiencing the menopausal transition), menopausal (defined as at least one year without having a menstrual period) and postmenopausal (at least one year without having a menstrual period, over 45 years old, over 40 years old or have completed the menopausal transition). Due to the limited research on menopause, definitions of the stages of menopause are scarce and often inconsistent; therefore, we have adopted the definitions provided by the papers included in this review. Studies were conducted in Europe (n = 10), the USA (n = 2), and Asia (n = 7). The mean age of included participants was 47.56 years (SD = 1.34), indicating that most samples clustered closely around the typical menopausal transition age; however, two studies did not include a mean age or age range. Study characteristics and details are reported in Table 2.

Table 2. Studies Included in this Review. † = Psychiatric diagnosis reported; ‡ = BMI data reported. See Supplementary Table 3 for full detail.

Author(s) Setting	Study design	Participants			Funding	Key Outcome Measure	Measure of Menopause	Relevant finding	Limitations
		Number	Age	Ethnicity					
An et al. (2022). Korea.	Comparative cross-sectional.	45,177 women who underwent regular health check-ups between 2015 and 2018.	Aged between 40 and 65 years. Average age: 47.3 years.	Asian.	No conflict of interest.	Suicidality within the past year measured by self-reported questionnaire.	Premenopause: regular periods. Early menopausal transition: difference of 7+ days in length of menstrual cycles. Late menopause: amenorrhea for 60+ days. Postmenopause: amenorrhea for 12+ months.	3236 women (7.16%) reported suicidal ideation. 1286 (5.73%) cases of suicidal ideation during pre-menopause, 531 (7.57%) during the early menopausal transition, 261 (6.65%) during the late menopausal transition and 1158 (9.8%) during	Self-administered questionnaire instead of clinical diagnosis. Limited generalisability due to a relatively healthy, high socioeconomic status sample of

								post-menopause.	Korean women.
Blackmore et al. (2008). U.K. †	Case series.	92 premenopausal and 17 postmenopausal women. 5 postmenopausal women reported experiencing perimenopausal affective episode	Average age: 40 years.	Not reported.	No conflict of interest.	Occurrence of affective episodes in women with a history of postpartum psychosis during perimenopause or postmenopause. Measured with the Schedule for Assessment in Neuropsychiatry (SCAN) (Wing et al. 1990).	Perimenopause: the period starting from onset of symptoms lasting until cessation of menstruation. Postmenopause: not menstruated for at least one year including surgical menopause (hysterectomy or ovariectomy).	1/5 cases had suicide attempt at age 44 in perimenopause. Suggests perimenopause as a suicide risk period for women with bipolar disorder.	Relied on self-reported menopausal symptoms without hormonal confirmation. No comparison group of other women with bipolar disorder.

Gojdz et al. (2013). Poland.	Cross-sectional.	221 working female physicians.	Average age: 50.57 years.	Not reported.	No conflict of interest.	Subjective sese of health amongst physicians aged 45-55 years. Measured with The Subjective Health Profile (SHP) (Sęk, 2000).	Perimenopause: women aged 45-55 years.	8 (3.62%) of subjects reported suicidal thoughts.	Sample limited to Polish female physicians, reducing generalisability.
Hendriks et al. (in press). U.K.	Observational cohort.	1,212 women attending a specialist menopause clinic.	Not reported.	Not reported.	No conflict of interest.	PHQ-9 (suicidal ideation; Kroenke et al., 2001) and Greene Climacteric Scale (menopausal symptoms; Greene, 1976).	Patient-defined perimenopause/ menopause status at a specialist clinic.	16% reported suicidal ideation on PHQ-9 before starting HRT.	Clinic-based sample, no control group, self-report only.
Hunt et al. (1987). Britain.	Prospective cohort.	4544 women from 21 menopaus	Most women were aged between	Not reported.	No conflict of interest.	Mortality among women who had started HRT over a 10-year period. A	Natural menopause: cessation of	Mortality was significantly lower than expected based on national	Small size. Absence of an internal control group

		e clinics who were receiving hormone replacement therapy. 11 died by suicide.	45 and 54 years.			postal questionnaire was sent out to elicit information on HRT use since entry to the study to enquire about major morbidity.	regular menstrual periods. Surgical menopause: hysterectomy with bilateral oophorectomy (removal of uterus and both ovaries). Partial surgical menopause: hysterectomy with at least one ovary intact. Perimenopause: irregular menses. Premenopause: regular menses.	rates (relative risk 0.58) apart from suicide or suspected suicide (relative risk 2.53), however, 7 of the 11 women who died from this had a psychiatric history before receiving HRT.	(attempts to recruit such a group were made but failed).

Kim Ji-Su et al. (2021). Korea. ‡	Cross-sectional.	1348 participants. 647 early menopausal women and 647 age-matched general middle-aged group.	From 45 to 55.	Asian.	Supported by the Ministry of Education of the Republic of Korea.	Differences in physical activity, sedentary behaviour, and mental health. Measured by the Korean-language version of the Global Physical Activity Questionnaire (Herrmann et al. 2013).	Early menopause: women younger than 45 years. Natural menopause: Women aged 45-55 years.	The early menopausal group was 1.5 times more likely to attempt suicidal behaviours than the natural menopause group.	Reliance on self-reported data. Conducted in South Korea, limiting generalisability to other populations.
Kornstein et al. (2010). USA. †	Comparative cross-sectional.	950 premenopausal, 380 perimenopausal, 562 postmenopausal.	Aged between 18 and 75.	White: 72.8%, black: 20%, other: 7.2%.	Federal funds from the National Institute of	Presentation and severity of depressive symptoms in women with major depressive disorder in	Premenopause: women younger than 40 years (even those who reported having a hysterectomy/bei	Postmenopausal women were more likely to have suicidal ideation than premenopausal women.	Sample restricted to outpatients with nonpsychotic MDD, limiting generalisabilit

					Mental Health.	relation to their menopause status. Used data from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study (Fava et al. 2003; Rush et al. 2004).	ng postmenopausal). Perimenopause: women aged 40 who reported not being postmenopausal or having a hysterectomy. Postmenopausal: women aged over 40 who reported being postmenopausal or having a hysterectomy.	Perimenopausal women were less likely to have suicidal ideation than postmenopausal women.	y. Menopausal status based on age and basic questions, lacking detailed classification. Reliance on self-report and recall, which may be unreliable.
Kułak-Bejda et al. (2023).	Comparative cross-sectional.	241 women in 2006 and 350 women in 2021.	Average age in 2006: 50.7.	Not reported.	No conflict of interest.	Severity of depression and menopause symptoms. Used	Menopause: over 40 years old. Menopause symptoms	Suicidal ideation was reported more in 2021 than in	Low number of women studied. COVID-19

Poland.			Average age in 2021: 51.5.			Menopause Rating Scale (MRS), the Blatt–Kupperman Menopausal Index (BKMI), (Blatt & Kupperman, 1953; Schneider et al., 2000), and The Beck Depression Inventory, (Beck et al. 1961).	measured using BKMO (Blatt & Kupperman, 1953).	2006. It increased by 9%.	pandemic may have increased the incidence of depression, anxiety, and menopausal symptoms.
Murphy et al. (2013). Doha.	Comparative cross-sectional.	41 pre-, peri-, and postmenopausal women.	Aged between 40 and 60 years.	Arab.	Qatar National Research Fund, National Priorities	Qualitative data about how Arab women perceive and experience menopause.	Self-reported as either premenopausal, perimenopausal, or postmenopausal.	Many of the women believed that suicide during menopause was a recognised issue. Noted that community support from religious	Small sample size and limited scope. Findings based on urban women, not reflecting

					Research Program.			involvement served as a protective factor.	rural experiences.
Nakanishi et al. (2023). Tokyo.	Longitudinal cohort.	2,944 mothers.	Average age: 44 years.	Asian.	This work was supported by a Grant-in-Aid for Transformative Research Areas from the Ministry of Educati	Suicidal ideation among middle-aged women assessed using the General Health Questionnaire (GHQ) (Goldberg and Hillier, 1979; Nakagawa and Daibo, 1982; Watson et al., 2001).	Premenopause: not yet started the menopausal transition. Perimenopause: currently experiencing the transition or had started after their baseline survey. Postmenopause: completed the transition.	Suicidal ideation was observed in 7.8% of the participants at baseline and in 9.7% at the follow-up. Follow-up suicidal ideation ranged between 7.9% and 12.9%.	Menopausal stage based on self-report, not validated by hormone levels. Results based on data from Japanese mothers of adolescents, affecting generalisability. No prior information on maternal

					on, Culture, Sports, Science and Technology of Japan.				suicidal ideation before the second-wave survey.
Pinto-Meza et al. (2006). Barcelona. †	Prospective cohort.	242 women (95 in their menopause)	Average age of the 242 women: 45.29. Average age of the menopausal women: 59.65.	Not reported.	No conflicts of interest.	Severity of depression, including suicidal ideation in women undergoing treatment for major depression with SSRIs.	Menopause: not menstruated in past year.	11.58 of the 95 menopausal women (12.2%) had recurrent thoughts of death, suicidal ideation, or a suicide attempt, in comparison to 1.4% of non-menopausal women and 11.5% of men.	Heterogeneous sample with varying diagnoses and depression severity. Self-reported menopausal status without hormone level analysis.

									Small sample size.
Ryu et al. (2022). Korea. ‡	Cross-sectional.	2,232 menopausal women.	Aged between 40 and 65 years.	Asian.	Funded by National Research Foundation of Korea (NRF) grant funded by the Korean government.	Suicidal ideation among menopausal women looking at association between age at menopause and suicidality. Measured using the Korean language version of the Patient Health Questionnaire-9 (PHQ-9).	Primary ovarian insufficiency: menopause before the age of 40. Early menopause: menopause between the age or 40 and 45. Menopause: after the age of 45.	Women with primary ovarian insufficiency had significantly higher suicidal ideation (>20%) than those who experienced menopause at a clinically normal age (<10%) or after 45 years of age (> 15%).	Cross-sectional design prevents causality assessment. Self-reported suicidal ideation introduces bias. Self-reported age at menopause poses recall bias risk.
Schairer et al. (1996).	Prospective cohort.	23,246 women who were	The mean age at time of	Not reported.	No conflict	Cause-specific mortality with a focus on	Menopause: over the age of 35 and being treated for	Suicides accounted for 60 of 1,472 deaths.	Cross-sectional design

Sweden.		prescribed menopausal oestrogens.	recruitment was 54.5 years.		of interest.	understanding the relationship between HRT and various causes of death in menopausal women.	menopause symptoms.		prevents causality assessment. Selection bias due to selective prescribing of HRT. Confounding factors not fully quantified.
Sherr et al. (2016). U.K.	Comparative cross-sectional.	170 women.	69 women over the age of 45, 57 women under the age of 45.	25% white, 69.9% black, 5.1% other ethnic	No conflict of interest.	Mental health outcomes and menopausal symptoms including suicidality among women with HIV.	Premenopause: younger than 45 years and not reporting any symptoms. Menopause/post menopause: Older than 45	54.1% of the under-45-year-old women and 56.9% of the over-45-year-old women reported suicidal ideation in the previous week.	Cross-sectional design prevents causality assessment.

				minorities.		Examined using the PHQ-9. Women above the age of 45 years completed the Menopause Specific Quality of Life questionnaire (MENQOL; Hilditch et al., 1996).	years and reporting symptoms.		
Son & Lee (2025). Korea. ‡	Cross-sectional.	Women from the Korean National Health and Nutrition Examination Survey (KNHANES)	Women aged 30 years and older (analysis grouped by age: <40, 40–60, ≥60).	Not reported; nationally representative Korean	Not reported.	Suicidal ideation, plans, and attempts (via survey).	Premenopausal: currently menstruating. POI: menopause before age 40. Early menopause: menopause between ages 40–45. Menopause:	Higher suicidal ideation and attempts in POI, early, and normal menopause vs premenopausal women.	Cross-sectional; self-report; cannot infer causality.

		; n ≈ 27,000–28,000 depending on outcome (ideation, plan, attempt).		sample.			menopause after age 45, considered clinically normal. Menopause was defined as the absence of menstruation for 12 consecutive months.		
Studd. (2014). London.	Cross-sectional survey.	238 patients at a menopause clinic.	Not reported.	Not reported.	No conflict of interest.	Effectiveness of HRT in treating hormonal-related depression in women. Explored severity of depression (severe, moderate, psychotic	Self-reported symptoms of depression related to hormonal events (premenstrual syndrome, post natal depression and	14% of women had attempted suicide.	None reported.

						episodes and suicide attempts).	perimenopausal depression).		
Usall et al. (2009). Multiple European countries.	Cross-sectional.	8,794 participants.	Mean age of premenopausal women: 35.62. Mean age of perimenopausal women: 50.42. Mean age of postmenopausal women: 63.67.	Not reported.	Funded by the European Commission.	Prevalence of suicidal ideation over the past year across different stages of the reproductive life cycle in women. Data collected via interview.	Premenopause: still having menstrual periods. Perimenopause: periods stopped temporarily due to onset of menopause or those who had stopped having periods permanently for less than one year. Postmenopause: periods have stopped	Perimenopausal women showed seven times higher prevalence of suicide ideation (7.8%) than premenopause (1.1%) and postmenopause (1%).	Small sample size in some categories. Self-reported menopausal status. Cross-sectional design prevents causal conclusions.

							permanently for more than one year.		
Weiss et al. (2016). USA. †	Cross-sectional.	298 women with mood disorders.	Aged between 19 and 90. Average age: 43.1.	82% were Caucasian, 11% of African heritage and 3% were Asian. The Remaining 4% were of other	No conflict of interest.	Severity of depressive symptoms in relation to various stages of the reproductive life cycle measured by the Quick Inventory of Depressive Symptomatology - Self-Report (QIDS-SR; Rush et al. 2003).	Premenopause with regular periods. Premenopause with irregular periods. Pregnant. Perimenopause: irregular periods as menopause approaches. Surgically-induced menopause: uterus and/or ovaries removed.	Hormonal status was not a significant predictor of suicide ideation or attempts. 33 % (6/18) of women who had undergone surgical removal of their ovaries or uterus were at high risk for suicide. 12% of all perimenopausal women and 18.5% of all	Did not examine other contributory factors (history of depression, substance use, life stress, genetic/biomarkers). Small sample size.

				varied origins.			Postmenopause: at least one year without a period.	premenopausal women were at risk for suicide.	
Won et al. (2016). Korea. ‡	Cross-sectional.	2,236 women.	Aged between 19 and 64.	Not reported.	No conflict of interest.	Prevalence of depression. Used data from the first year of the KNHANES VI, performed by the Korean Centers for Disease Control and Prevention (CDC; 2013).	Yes/no: “have you experienced menopause?”.	6.5% of 19-29-year-olds, 4% of 30-49-year-olds and 5.9% of 50-64-year-olds reported suicidal thinking in the past year.	Cross-sectional design limits causation.

Quality Assessment

Each study was scored based on specific criteria related to its design. The MMAT used in this review includes two screening questions and additional questions dependent on the study design. These criteria are scored on a nominal scale (Yes/No/Can't tell) and allow for the assessment of five main type of studies. Studies were rated as low (0–40%), medium (40–60%) or high quality (60%+). The MMAT assessed multiple things to evaluate the quality of studies including relevance of research questions, appropriateness of methodology, study sample and recruitment, data collection, risk of bias and data analysis and interpretation.

Of the 19 studies, 12 studies scored high in methodological quality (80% or higher), while seven scored medium (40% to 60%). Lower quality ratings were due to small sample sizes (n = 2), lack of control groups (n = 1), reliance on retrospective data (n = 1), lack of longitudinal data (n = 2), lack of detailed statistical analysis (n = 1) and inadequate consideration of confounding factors (n = 5). See supplementary Table 2 for further information on MMAT scores and the reasoning behind the assigned scores.

Suicidality and Menopause

The following section reports the primary outcomes of the systematic review: the relationship between suicidality and menopause in those studies that used the term 'menopause' as a broad term for the whole transition, without exploring its stages. Some high-quality studies (n=6) reported an increased risk of suicidality during the menopausal transition when compared to pre-menopause. Pinto-Meza and colleagues (2006) observed a significant increase in suicidality independent of depression symptoms during menopause in a cohort of Spanish women, and Ryu et al. (2022) found similar results in a large-scale cross-sectional study in Korea. Son and Lee (2025), also using Korean national data, reported that women who had reached menopause had significantly higher odds of suicidal ideation, suicide planning, and suicide attempts compared to premenopausal women, with risk highest among those with premature or early menopause. Won et al. (2016) found the highest levels of suicidal thoughts among women in their 50-64-year-old age group, only for those

without depression. In the UK, Sherr et al. (2016) reported 57% of the menopausal women in their study experienced suicidal thoughts in the previous week, and Hunt et al. (1987) found that suicide or suspected suicide rates were higher than expected in a population of women utilising menopause clinics and using HRT, with 11 out of 12 deaths at 10-year follow-up being due to suicide.

Four moderate-quality studies also supported the findings of increased suicide risk during the menopausal transition. Hendriks et al. (in press) found that 16% of women attending a specialist menopause clinic in the UK reported suicidal ideation or thoughts of self-harm in the two weeks prior to their appointment, highlighting the clinical relevance of suicidality in women seeking menopause-related care. Murphy et al. (2013) found in their qualitative study with Arab women, suicidality during menopause was a known issue to them, but it was often attributed to a lack of religion and social support, which they perceived as more characteristic of Western cultures than their own. Kułak-Bejda et al. (2023) observed an increase of 9% in suicidality (Beck et al., 1961) among menopausal Polish women between 2006 to 2021. However, this research was limited as they did not have a comparison group of non-menopausal women. Studd (2014) reported 14% of women had attempted to die by suicide in their cross-sectional survey of those attending a Premenstrual Syndrome (PMS) and Menopause Centre in the UK; however, it is important to note that this centre also treated those with premenstrual syndrome and postnatal depression, thus the sample did not comprise exclusively menopausal women.

Suicidality and Perimenopause

Some high-quality (n=4) and moderate-quality studies (n=3) found that suicidality was more prevalent during the perimenopausal period. An et al. (2022) found that perimenopausal (and post-menopausal) middle-aged Korean women had higher rates of suicidality compared to those who were premenopausal. Specifically, those in perimenopause were 33% more likely to experience suicidality than those who were premenopausal. Nakanishi et al. (2013) reported that perimenopause was associated with the manifestation of suicidal ideation at follow-up, four to nine years after baseline,

even after controlling for prior incidences of suicidality. Similarly, Usall et al. (2009) found a seven-fold increased risk of suicidal ideation among women experiencing perimenopause when compared to pre- and post-menopause, and men of the same age brackets independent of mood and anxiety disorders; a result they found across six European countries. Gojdz et al. (2013) found that 4% of women from a cohort of Polish female physicians were experiencing suicidal thoughts during perimenopause. Three moderate-quality studies also suggested increased suicide risk during perimenopause. Specifically, Blackmore et al. (2008) found that one woman reviewed for their case series had attempted suicide at age 44 while being actively perimenopausal (i.e. experiencing hot flushes, erratic menstrual periods, and poor sleep quality). Studd (2014) also reported that "many" of the 14% of women in his study who had attempted to die by suicide were experiencing perimenopausal depression. Similarly, Hendriks et al. (in press) reported that 16% of women attending a specialist menopause clinic in the UK, many of whom were actively perimenopausal, experienced suicidal ideation or thoughts of self-harm in the two weeks prior to attending their initial appointment. This further supports the observation that suicidality may be a prominent issue during the perimenopausal phase, particularly in clinical populations seeking support for hormone-related symptoms.

Cultural and Social Factors and Suicidality

The above findings suggesting suicidality is elevated among some women experiencing menopause were consistent across differing cultural contexts, with the effect being observed in studies from Asia (An et al., 2022, Kim Ji-Su et al., 2021; Nakanishi et al., 2023; Ryu et al., 2022; Won et al., 2016), Europe (Gojdz et al., 2013; Kułak-Bejda et al., 2023; Pinto-Meza et al., 2006; Son & Lee, 2025; Usall et al., 2009), the UK (Blackmore et al., 2008; Hendriks et al., 2024; Hunt et al., 1987, Sherr et al., 2016; Studd, 2014) and the Middle East (Murphy et al., 2013). This indicates that while cultural nuances – such as differing attitudes towards aging and the availability of support systems – exist, the impacts of mental and physical health difficulties on menopause may be universal.

In Sherr et al.'s (2016) study, over half of menopausal women were found to have experienced suicidal thoughts in the past week, 69.9% of participants were of Black ethnic origin. Although the authors did not directly examine the influence of ethnicity on suicidality during menopause, the high rate of suicidal ideation underscores the importance of considering how cultural and social factors may contribute.

An et al. (2022) reported that family support – particularly spousal support – was important in protecting against suicidality, and Nakanishi et al. (2023) reported that women who had greater social support at baseline were less likely to experience suicidality at follow-up, four to nine years after baseline. However, they also reported that menopausal mothers of adolescents with psychological or behavioural problems were more likely to experience suicidality, even when controlling for social support. Kułak-Bejda et al. (2023) noted that increased suicidal ideation during the menopausal transition may be linked to a decrease in social support, as women in their study reported needing more help from spouses and friends but received less as their suicidality increased. Murphy et al. (2013) found that Arab women reported religion playing a role in how they coped with menopause, with it often being a protective factor against suicidality. Women in this study believed Western women to be more vulnerable to suicidal thoughts during menopause due to a lack of religion and thus no sense of community.

Gojdz et al. (2013) reported for perimenopausal women (aged 45-55 years), suicidal thoughts had a statistically significant relationship with a lower self-perception of health. Additionally, a significant relationship was found between suicidal thoughts and physical activity, relationship with physical appearance and eating habits, as women who exercised more than once a week, were satisfied with how they looked and consumed regular meals had higher self-perception of health and reported fewer suicidal thoughts.

However, Son and Lee (2025) found that menopausal women had higher odds of suicidal ideation, planning, and attempts compared to premenopausal women, even after adjusting for socioeconomic and lifestyle factors such as income, employment, BMI, alcohol use, and smoking. This suggests that while social context plays a role,

biological and psychological vulnerabilities associated with menopause may transcend cultural boundaries.

Comorbidities and Suicidality

Psychological or physical health conditions and impacted on suicidality during menopause (An et al., 2022; Blackmore et al., 2008; Hunt et al., 1987; Nakanishi et al., 2023; Sherr et al., 2016; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016). Blackmore et al. (2008) described a case study of a menopausal woman with bipolar disorder who experienced multiple, severe mental health issues at different stages of her life leading to two suicide attempts, one when she was in perimenopause after a hysterectomy and ovariectomy. An et al. (2022) noted that alcohol use, at clinical and sub-clinical levels (greater than or equal to 10 grams of ethanol per day) during menopause was significantly associated with an increase in suicidality, particularly during the later stages of the transition. They also found that, in the later stage, those with comorbid depression had higher suicidality levels. Obesity (BMI equal to or greater than 25) and insomnia were other comorbidities found to increase suicidality in the later stages of menopause.

Hunt et al. (1987) reported that 7 out of the 11 women who died by suicide had a documented history of psychiatric conditions before seeking HRT. Relatedly, Usall et al. (2009) found that comorbid mood and anxiety disorders were associated with an increased risk of suicidality during menopause. This was also supported by Nakanishi et al. (2023) who found that history of depression was a significant predictor of suicidal ideation. Weiss et al. (2016) found that anxiety was the strongest predictor of suicidal thoughts in their cohort of women across the reproductive cycle, including the menopausal transition. Even in studies where no link was found between menopause and suicidality, authors reported that those with psychiatric disorders during this time may be more vulnerable to suicidality (Schairer et al., 1997).

Sherr and colleagues (2016) documented that 57% of all menopausal women attending an HIV clinic reported experiencing active suicidal ideation, and the combination of other mental health challenges such as anxiety and depression alongside this was

associated with a higher risk of suicidality. Pinto-Meza et al. (2006) found that menopausal women with diagnosed depressive disorders had a poorer response to SSRI treatment, and had higher suicidality than non-menopausal women, which suggests that the menopausal transition may interfere with drug treatment for depression, potentially contributing to subsequent suicidality.

Regarding physical comorbidities, Ryu et al. (2022) found that those who had the highest suicidality also had higher rates of chronic diseases such as diabetes, hypertension, and obesity.

Early Menopause and Suicidality

Kim Ji-Su et al. (2021) explored early menopause in a cohort of Korean women. They found that women who experienced menopause before the age of 45 were 1.5 times more likely to attempt suicide than the non-early menopausal group. Ryu et al.'s (2022) study echoed these results, finding that those experiencing menopause at an earlier age had a higher incidence of suicidality, even without a diagnosis of a depressive disorder. Son and Lee (2025) further reinforced these findings in a large, nationally representative Korean cohort: women with premature ovarian insufficiency (before age 40) had significantly higher odds of suicidal ideation, suicide planning, and suicide attempts compared to premenopausal women. Early menopause (ages 40 – 45 was also significantly associated with increased suicidal ideation and suicide planning, although suicide attempts in this group were not statistically significant.

Studies That Did Not Find Increased Suicidality

Three studies did not find a significant association between menopausal status and increased suicidality. Schairer et al. (1997) conducted a longitudinal study to examine changes in suicidality over the menopausal transition through mortality analyses; however, their data did not show a significant increase. The authors reported that suicide accounted for most injury-related deaths in their cohort (56%), but when compared to the total number of deaths, suicide was not a dominant cause of mortality

(4%). They also found that women using higher doses of hormone replacement therapies were at higher risk for death by suicide compared to those using lower doses and the general population, however, pre-HRT symptom severity was not controlled for, and therefore those using HRT may have been experiencing more detrimental symptoms. Weiss et al. (2016) found that menopausal status did not predict suicidality directly, with perimenopausal women having the lowest risk for suicide. However, they also found that 33% of those experiencing surgically induced menopause in their cohort were classified as high risk for suicidality. Additionally, Kornstein et al. (2010) reported that postmenopausal women had the highest levels of suicidal ideation when compared to both pre-and perimenopausal women, even after controlling for sociodemographic and clinical baseline differences, with perimenopausal women having the lowest levels.

DISCUSSION

This review provides an important extension to previous syntheses of suicidality in the menopausal transition. While Martin-Key and colleagues (2024) offered an initial systematic overview, our review uniquely examines cultural and ethnic contexts, the specific risk of early menopause and primary ovarian insufficiency (POI), and the role of comorbid physical health conditions such as metabolic syndrome and high BMI; factors that have not been comprehensively synthesised before. This more nuanced approach helps address the complex interplay of biological, social, and physical health factors in suicidality during menopause. Methodologically, we rigorously followed PRISMA guidelines for study selection and quality assessment and applied the MMAT to appraise the quality of included studies. Given the heterogeneity in study designs, populations, and outcomes, a narrative synthesis (Popay et al., 2006) was the most appropriate and transparent approach to integrating diverse evidence while respecting methodological differences. This ensures that our synthesis is systematic and meaningful, despite the lack of pooled effect sizes.

This review aimed to build on previous work by synthesising evidence about suicidality during menopause, with a focus on early menopause, POI, cultural and ethnic factors,

and physical health comorbidities, and to highlight implications for integrated care. Key contributions of this review include:

- Systematically highlighting early menopause and primary ovarian insufficiency (POI) as unique risk factors for suicidality during menopause, even when depression or anxiety is not present.
- Exploring how cultural and ethnic contexts shape the experience of suicidality during menopause, an area that has received limited attention in previous syntheses.
- Synthesising evidence on comorbid physical health conditions, such as metabolic syndrome and high BMI, which are important but often overlooked contributors to suicidality in this population.

Many included studies reported higher rates or prevalence of suicidality during the menopausal transition, though most were cross-sectional and lacked comparator groups, limiting conclusions about changes in risk (Kułak-Bejda et al., 2023; Hendriks et al., 2024; Hunt et al., 1987; Murphy et al., 2013; Pinto-Meza et al., 2006; Ryu et al., 2022; Schairer et al., 1997; Sherr et al., 2016; Son & Lee, 2025; Weiss et al; 2016; Won et al., 2016). Some studies indicated that this effect was independent of prior suicidality (Nakanishi et al., 2023) and mood and anxiety disorders (Usall et al., 2009). Perimenopausal women were particularly vulnerable, experiencing higher rates of suicidality than premenopausal and postmenopausal women (An et al., 2022; Blackmore et al., 2008; Gojdz et al., 2013; Nakanishi et al., 2013; Usall et al., 2009), except one study, which found post-menopausal women to have the highest level of suicidality (Kornstein et al., 2010).

Three primary factors that could increase suicide risk during menopause emerged from the review: hormonal changes, psychosocial factors, and cultural factors. Hormonal changes were most consistently reported as significant factors that influence suicidality during menopause (An et al., 2022; Gojdz et al., 2013; Studd, 2014; Usall et al, 2009), as fluctuating levels of oestrogen and progesterone characterise the transition, with oestrogens exerting neuroprotective effects through receptors in the brain (Ryu et al., 2022). As oestrogen levels decline, these neuroprotective effects diminish, which can

lead to increased vulnerability to depressive symptoms, mood instability, and suicidality (Soares & Frey, 2010). Two studies noted that hormonal fluctuations influence poor mental health, with no mention of suicidality specifically (Blackmore et al., 2008; Kim Ji-Su et al., 2021). Notably, some studies highlighted the perimenopausal stage as particularly vulnerable, which is also the phase characterised by the highest level of hormone fluctuation (An et al., 2022; Usall et al., 2009). This is reflective of the limited research available in this area, which indicates that perimenopause is characterised by decreasing or fluctuating oestrogen and progesterone levels, and suicides in women tend to cluster around these hormonal states (Baca-Garcia et al., 2010; Stacy et al., 2022), potentially via lower hormone activity reducing serotonergic function (Arango et al., 2001). However, issues of suicidality and potential mediating factors have not been adequately examined in existing research.

Due to the limited direct research on the body's natural hormone levels, to understand the role of hormones in suicidality during menopause, it is important to explore the effects when they are introduced through other means, such as HRT. NICE guidance acknowledges that HRT can alleviate low mood and anxiety when these symptoms are associated with menopause, however, it also notes that cognitive behavioural therapy (CBT) may be an option for managing this (NICE, 2024). In this review, mixed results regarding HRT were found. Schairer and colleagues (1997) reported an elevated risk of suicidality among women using more potent oestrogen or combined hormone replacement regimens. On the other hand, Studd (2014) found that over one-third of women in their study answered "yes cured" when asked if HRT helped their depression, and over half reported a significant improvement; a factor that can indirectly lower suicidality. When looking at the wider scope of literature regarding HRT and suicidality, it is limited. A recent review by Herson and Kulkarni (2022) discusses that treatments with HRT are an obvious option for depression during menopause as there are a few small randomised clinical trials that show it is effective (Fischer, Gleason & Asthana, 2014; Gordon et al., 2018; Rubinow et al. 2015). However, in their systematic review, Stacy and colleagues (2022) discussed a large retrospective longitudinal study in a veteran population that found more than a two-fold increase in suicide-related deaths among HRT users, but the relationship weakened after accounting for comorbid psychiatric

conditions and medication usage (Gibson, 2021). Further, larger clinical trials are required as direct research on the effects of HRT on suicidality is lacking.

Early menopause (i.e. perimenopause starting between the ages of 40 and 44; NICE, 2024) was identified as a particularly severe risk factor for suicidality during menopause as Kim Ji-Su and colleagues (2021) found those who reported experiencing menopause before the age of 45 were one and a half times more likely to experience suicidal ideations. Research exploring early menopause primarily focuses on general mental health outcomes such as depression and anxiety rather than specifically addressing suicidality, however, it suggests that early menopause is with impaired mental health (Kundu & Acharya, 2023). Additionally, they found their participants to have higher perceived stress, also known to be a risk factor for suicidality at other points of the female lifespan (Feskanich et al., 2022).

Furthermore, Ryu and colleagues (2022) found that age at menopause was significantly associated with a prevalence of suicidal ideation, with their primary ovarian insufficiency (POI; i.e. perimenopause starting before 40 years; NICE, 2024) cohort having a fourfold higher risk than their regular menopause group; a finding also reinforced by Son and Lee (2025), who reported that women with POI had significantly greater odds of suicidal ideation (OR = 1.53), planning (OR = 1.92), and attempts (OR = 2.01) compared to premenopausal women, even after adjusting for depression, BMI, and alcohol use.

Ryu and colleagues (2022) also found that those with POI had higher rates of chronic illness such as diabetes, obesity, and hypertension, which is reflective of other research in the area (see Deeks et al., 2011; Santoro, 2003). Women with chronic illness are at a higher risk for suicidality, as chronic health conditions can exacerbate psychological distress and contribute to increased vulnerability (Gürhan et al., 2019). Given previous research in the area suggests that POI in general is associated with impaired mental health (Xi et al., 2023) screening for POI in healthcare settings is crucial, as these individuals may be at a higher risk for developing suicidality due to the compounding effects of their condition and the menopausal transition. Additionally, a cross-sectional study found that one-third of women with POI who also suffer from anxiety or

depression are underdiagnosed (Menezes et al., 2020), further highlighting the need for more comprehensive mental health screening for this population.

Physical symptoms commonly experienced during menopause, such as hot flashes, sleep disturbances, and joint pain, are also strongly linked to poor mental health outcomes in menopausal women without POI (Zhou et al., 2021). Weiss and colleagues (2016) found that these physical health challenges, when combined with anxiety, significantly elevated the severity of depressive symptoms in menopausal women, heightening the likelihood of suicidal ideation. Therefore, addressing both physical and mental health aspects of menopause is essential to mitigate the risk of suicidality during this time. However, it is notable that most studies did not report BMI data – only four studies (Kornstein et al., 2010; Son & Lee, 2025; Won et al., 2016; Kim Ji-Su et al., 2021) provided this information – limiting our understanding of how metabolic health may intersect with suicidality during this transitional phase. Given the significant metabolic changes that occur during menopause (Carr, 2003) and their relevance for mental health, including increased suicidality (Divsalar et al., 2022; Ko et al., 2019) highlights the need for future research and clinical practice to address the interplay of physical and mental health factors in menopausal suicidality.

The review also found that psychosocial factors, including pre-existing psychological conditions and social support, significantly influenced suicidality during the menopausal transition (Murphy et al., 2013; Sherr et al., 2016). Women with a history of depressive or anxiety disorders were at a higher risk of suicidality during menopause, with some studies suggesting that the addition of hormonal changes at a time when someone is also experiencing psychological difficulties – which could be attributed to, or separate from, hormonal activity – could exacerbate these symptoms and thus lead to suicidal thoughts (Blackmore et al., 2008; Usall et al., 2009). Previous research indicates that psychiatric diagnoses of general anxiety disorder (Scali et al., 2012) and major depressive disorder (Cooper et al., 2021) may be associated with reduced resilience to deal with life stressors. This loss of resilience may further heighten the risk of suicidality during menopause, as women face both the psychological burden of hormonal fluctuations and reduced ability to cope with additional stressors as they normally would. Contrastingly, two studies found suicidality to be higher, during

menopause, independent of prior suicidal ideation (Nakanishi et al., 2023) and comorbid mood disorders (Usall et al., 2009).

Heightened alcohol use during menopause was associated with an increase in suicidality (An et al., 2022), reflecting patterns seen at other times in the lifespan, specifically with women (Lange et al., 2022). There is evidence that oestrogens and progesterone can influence alcohol intake (Buccelli et al., 2016), with animal studies showing that higher levels of oestrogen increase neural excitability, synaptic transmission, and the metabolism rate of ethanol (Kishimoto et al., 2002). This may be why women find alcohol more rewarding during the follicular phase of the menstrual cycle, when oestrogen levels are highest (Woolley, 2007). It is also known that oestrogen levels can be up to 30% higher during perimenopause when compared to premenopause (Prior, 2005) before they become erratic and eventually settle into low levels (Soules et al., 2001), potentially driving similar rewarding patterns of increased alcohol use. Times of hormonal fluctuation such as the postpartum period have also been linked to increased alcohol use (Skalkidou et al., 2012), and the unpredictable hormonal shifts during perimenopause may similarly lead to this outcome. Given these risks, it is critical that alcohol screening and support services are integrated into routine menopause care for women to reduce risk of suicidality.

Social support, particularly from family and spouses, was a found to be a protective factor against suicidality in some studies, and social isolation and lack of community or support increased suicide risk (Kułak-Bejda et al., 2023; Nakanishi et al., 2023; Sherr et al., 2016). The Women's Health Strategy for England (Department of Health and Social Care, 2024) has highlighted the significance of mental and social well-being in the health outcomes of menopausal women and has recognised the current gaps in this type of care. To help bridge this gap, The Menopause Café initiative, introduced in 2017, offers a community-based approach that addresses this need for social connection among menopausal women, providing a safe, non-judgmental space for discussing menopause-related experiences and challenges (Weiss, 2020). Notably, Menopause Cafés not only welcomes those experiencing menopause but also partners, family members and friends as per their official website (Menopause Café, n.d.). This inclusivity strengthens the support network by enabling loved ones to better understand

menopause and actively participate in supportive conversations. Such supportive environments can foster peer support, reduce social isolation, and promote emotional well-being which may mitigate suicide risk (Stacy et al., 2022).

Cultural influences, particularly societal attitudes towards menopause also played a role in increasing the risk of suicidality (Murphy et al., 2013). These articles indicated that in cultures where menopause is viewed negatively or stigmatised, women reported higher levels of suicidality. Contrarily, in cultures where menopause is viewed positively and seen as a natural part of life, women experienced lower rates of suicidal ideation (Murphy et al., 2013). This suggests that cultural perceptions are important in how women experience and cope with the symptoms of menopause, including suicidality. However, while it's important to acknowledge the challenges faced during menopause, framing menopause predominantly in terms of disability – as suggested by recent Equality and Human Rights Commission (2024) guidance – may contribute to the stigmatism and ageism already faced by this population (The Lancet, 2024).

The mental health of menopausal women can be particularly at risk when combined with the demands of parenting, especially for those raising children who may have developmental, psychological, or behavioural issues. While only one study in this review directly links such parenting challenges with suicidality during menopause (Nakanishi et al., 2023), broader research consistently demonstrates that mothers in these roles generally face elevated mental health difficulties such as stress, anxiety, depression, and suicidality (Gilson et al., 2018; Lee, 2013). Research also highlights the significance of building resilience when raising children with conditions such as these (McConnell & Savage, 2015), a characteristic that becomes challenged in menopause (Taylor-Swanson et al., 2018). This loss of resilience, compounded by hormonal shifts and physical changes during this time could make the cumulative stress feel overwhelming, potentially heightening the risk of suicidality. Supporting mothers of children with complex needs is crucial, particularly during menopause, and dedicated services are essential to provide this population with assistance in navigating the combined pressures of menopausal changes and challenging parenting.

Strengths and Limitations

This systematic review is the first to comprehensively examine suicidality during the menopausal transition from multiple perspectives, including hormonal, psychosocial and cultural. The review methodology was consistent with the most up-to-date standards (PRISMA guidelines) for study selection, data extraction and quality assessment. However, the review has several limitations. First, the number of overall included studies is limited, which is reflective of the lack of research in this area. There are also a small number of studies that focus specifically on the perimenopausal stage which limits the ability to draw any categorical conclusions about this critical period of the menopausal transition. There were no studies that explored self-harm or non-suicidal self-injury, which is a significant gap as these behaviours are important mental health concerns that often co-occur with suicidality but serve different psychological functions (Klonsky, 2007). Failing to consider these behaviours limits the scope of understanding the full range of challenges menopausal women may face, as many turn to self-harm to cope with symptoms (Hendriks et al., 2024). Although studies such as Clements et al. (2025) provide important insight into self-harm and suicide among midlife women aged 40–59, the lack of menopausal staging meant the study did not meet inclusion criteria. This highlights the need for future research to clearly define menopausal status when exploring self-harm behaviours.

Another limitation is the reliance on self-reported data, which may introduce bias and impact the reliability of the findings. Future research may utilise a menopause symptom tool such as the Greene Climacteric Scale (Greene, 1998). Studies were also only included if they were published in the English language, or where an English translation was available, so further research on cultural differences may exist but were not included in this review. This may have limited the review's ability to capture the full scope of the relationship between menopause and suicidality, particularly in contexts where cultural attitudes towards menopause may differ. Additionally, the small number of longitudinal and RCT studies further limits exploring the causal association between suicidality and menopause.

Another limitation would be the inconsistency in distinguishing menopausal stages across the included studies. This lack of standardisation makes direct comparisons

across studies challenging and may contribute to variation in the findings. Finally, the focus on published studies may introduce publication bias, as studies that have significant results are more likely to be published than those with non-significant findings (Dwan et al., 2013; Olson et al., 2002).

Additionally, most included studies were observational, with the majority being cross-sectional and lacking comparator groups (see Table 2). As such, this review cannot draw conclusions about changes in suicidality risk over time or causal associations. While several studies reported increased suicidality during the menopausal transition, these findings must be interpreted cautiously. Additionally, the inclusion of qualitative and quantitative studies necessitated a narrative synthesis rather than a statistical meta-analysis, which limits generalisability. Finally, the use of MMAT scores to label studies as high or medium quality does not override fundamental limitations inherent to certain study designs, particularly cross-sectional research. Although several cross-sectional studies were rated as "high quality" using the MMAT, we acknowledge that cross-sectional designs are limited in their ability to establish causality or track change over time. However, consistent with MMAT guidance, these studies were assessed based on the rigour with which they applied their design, rather than being penalised for the design type itself. This is aligned with existing literature supporting fair and context-specific quality appraisal of cross-sectional research (Hong et al., 2018; Moskalewicz & Oremus, 2020).

Implications for Clinical Practice

While definitive conclusions about causality cannot be drawn, the findings suggest that suicidality during menopause warrants clinical attention. The current review highlights the importance of incorporating psychological screening and support into the care pathway for those going through menopause. Healthcare providers should be aware of the heightened risk of suicidality during the menopausal transition and actively assess for mental health symptoms such as depression, anxiety, and suicidal ideation as part of routine menopause care. Regular screening tools such as the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) for depression could be beneficial in

identifying at-risk individuals, as it includes a specific question that focuses on thoughts of suicide or self-harm and is reasonably effective in detecting suicidality (Simon et al., 2013). Alternatively, the Perimenopausal Depression Scale (Kulkarni et al., 2018) could be utilised as it is specific to depression experienced during menopause and includes a question regarding suicidality.

This review indicates the need for a holistic approach to menopause care that includes considering psychosocial factors. Social support networks, including counselling services and peer support groups, should be made available to those suffering from mental ill-health during the menopausal transition phases, especially those with a history of mental health issues or those experiencing social isolation (Murphy et al., 2013; Stacy et al., 2022). Screening for increased alcohol use, often noted during menopause, with access to relevant support services could further mitigate suicide risk. Menopause Cafés – a supportive and safe environment for women to openly discuss their experiences with menopause – were first introduced in the UK in 2017 and have been instrumental in improving mental well-being during menopause (Weiss, 2020). There have been more than 250 Menopause Cafés that have taken place in the UK and Canada since 2017, and they have been described as the most successful way to facilitate social cohesion, and the most effective method of reducing loneliness and stigmatisation experienced by menopausal women (Weiss, 2020). However, research is needed to confirm these findings. If supported, expanding the availability of Menopause Cafés could provide a crucial and accessible resource for women, possibly alleviating mental health symptoms experienced during the menopausal transition.

Increased access to services that include cognitive-behavioural therapy (CBT) or mindfulness-based stress reduction (MBSR) may be helpful, as interventions utilising these techniques have been shown to alleviate depressive symptoms and improve overall well-being in menopausal women (Mann et al., 2012; Sood et al. 2019), and NICE (2024) recommends CBT as a treatment option for depressive symptoms during menopause. Additionally, educational interventions that provide information to women and their families about the potential psychological challenges of menopause can help reduce stigma and encourage early intervention, as research shows many women have limited knowledge about menopause throughout their lives (Munn et al., 2023),

however, it is essential that these educational efforts present menopause as a natural life stage rather than framing it as a disability or medicalised condition, which could inadvertently reinforce negative stereotypes (The Lancet, 2024). Targeted support for women with early menopause or POI, who face a significantly higher suicidality risk is also essential for addressing their mental and physical health needs.

Cultural competence in clinical practice is crucial for menopause care, as societal attitudes towards the transition can significantly impact women's mental health. Healthcare providers should be sensitive to cultural differences and tailor their treatment plans accordingly, offering culturally appropriate support and resources. Research shows that 45% of Black and minority menopausal women experience delays in diagnosis, and therefore do not get sufficient and timely care (The Fawcett Society, 2022). People from different cultural and ethnic backgrounds may have different beliefs and attitudes toward menopause which can have an impact on their ability to seek help, and their ability to adhere to psychological interventions (British Menopause Society, 2023; Maclellan et al., 2023).

Lastly, women who manage the combined challenges of menopause and parenting children with complex needs are at heightened mental health risk, suggesting a need for specialised mental health support for this population. In the UK, some initiatives provide targeted support for non-menopausal mothers in this position, although resources remain limited and are often challenging to access (Carers UK, 2021). Currently, there are no dedicated support services in the UK specifically designed to address the unique challenges faced by menopausal women in this position, leaving a critical gap in mental health support for this vulnerable population.

Conclusion

Overall, the findings suggest that healthcare systems should prioritise the development of integrated care models that consider the multifaceted needs of those experiencing the menopausal transition. This includes medical treatment, mental health support and social support services to ensure more comprehensive care. The integration of mental health services and screening into routine menopause care could help identify and

support women at risk of suicidality, equipping them with knowledge and skills to combat psychological stressors. Enhanced training for clinicians in recognising menopause-induced mental health issues is also imperative, as many medical programmes do not include detailed menopause-focused modules within their curriculum (AARP, 2018). Offering continued education and specialised training on menopause to practising clinicians, specifically related to mental health issues and risk of suicide during menopause, would ensure that they are better equipped to provide support to women experiencing menopause transitions.

Declarations

Ethics approval and consent to participate

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013. All procedures involving patients were approved by Liverpool John Moores University Research Ethics Committee (LJMU REC ID: 22/PSY/080), and all participants provided informed verbal consent prior to enrolment in the study. The rationale for obtaining verbal consent instead of written consent was to increase accessibility and participant comfort, particularly given the sensitive nature of the study topic.

Consent for publication

All participants provided informed consent for their anonymised data to be used in this publication. No identifiable information has been included, and all efforts have been made to ensure confidentiality and privacy in reporting the findings.

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Author contributions

OH, PS, JCM, and AR conceived and designed the study. LN, CC and DR contributed to study material development and recruitment. OH and LS collected the data. OH, PS, JCM and AR analysed the data. OH led interpretation of study findings. All authors contributed to interpretation of findings. OH led the draft of the work. All authors read, commented on and approved the final version of the paper. OH is the lead author. PS is the senior researcher.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Availability of data and materials

The authors confirm that the data supporting the findings of the study are available within the article and/or its supplementary materials.

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Supplementary Materials

Supplementary Table 1. Similarities and Differences Between Included Studies.

	Population Characteristics	**Definitions**	**Type of Study**
Similarities	Most studies (14) focused on women in the menopausal age range (An et al., 2022; Blackmore et al., 2008; Gojdz et al., 2013; Hendriks et al., 2024; Hunt et al., 1987; Kim Ji-Su et al., 2021; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi et al., 2023; Pinto-Meza et al., 2006; Ryu et al., 2022; Schairer et al., 1997; Son & Lee, 2025; Studd, 2014). Most studies (13) did not consider socioeconomic and cultural factors and their effect on menopause	All studies gave clear definitions of menopause as being the cessation of menstrual periods after one year (An et al., 2022; Blackmore et al., 2008; Gojdz et al., 2013; Hunt et al., 1987; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi et al., 2023; Pinto-Meza et al., 2006; Ryu et al., 2022; Schairer et al., 1997; Sherr et al., 2016; Son & Lee, 2025; Studd, 2014; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016).	Most studies (13) were cross-sectional in design (An et al., 2022; Gojdz et al., 2013; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Kułak-Bejda et al., 2023; Murphy et al., 2013; Ryu et al., 2022; Sherr er al., 2016; Son & Lee, 2025; Studd, 2014; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016). Most studies (18) used self-report methods for gathering data on menopausal symptoms and suicidality (An et al., 2010;

	(Blackmore et al., 2008; Hendriks et al., 2024; Hunt et al., 1987; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Pinto-Meza et al., 2006; Ryu et al., 2022; Schairer et al., 1997; Sherr et al., 2016; Studd, 2014; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016). Most of the studies (12) did explore pre-existing health conditions and their effect on menopause-related health outcomes, including alcohol use (An et al., 2022; Son & Lee, 2025), psychiatric conditions (Blackmore et al.,	All studies defined suicidality as either thoughts, attempts or completed suicide, with none including self-harm/suicidal self-injury (An et al., 2022; Blackmore et al., 2008; Gojdz et al., 2013; Hendriks et al., 2024; Hunt et al., 1987; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi et al., 2023; Pinto-Meza et al., 2006; Ryu et al., 2022; Schairer et al., 1997; Sherr et al., 2016; Son & Lee, 2025; Studd, 2014; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016).	Blackmore et al., 2008; Gojdz et al., 2013; Hendriks et al., 2024; Hunt et al., 1987; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi dt al., 2023; Pinto-Meza et al., 2006; Ryu et al., 2022; Sherr et al., 2016; Son & Lee, 2025; Studd, 2014; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016). Most studies (16) were observational (An et al., 2022; Blackmore et al., 2008; Gojdz et al., 2013; Hendriks et al., 2024; Kim Ji-Su et al., 2021; Kornstein et al.,

	2008; Hendriks et al., 2024; Hunt et al., 1987; Nakanishi et al., 2023; Schairer et al., 1997; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016), and physical health conditions (Ryu et al., 2022; Sherr et al., 2016).	Just over half of studies (10) separated the menopausal transition into two or three stages i.e. premenopause, perimenopause and/or postmenopause (An et al., 2022; Blackmore et al., 2008; Hunt et al., 1987; Kornstein et al., 2010; Murphy et al., 2013; Nakanishi et al., 2023; Sherr et al., 2016; Son & Lee, 2025; Usall et al., 2009; Weiss et al., 2016).	2010; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi et al., 2023; Pinto-Meza et al., 2006; Ryu et al., 2022; Sherr et al., 2016; Son & Lee, 2025; Usall et al., 2009; Weiss et al., 2016; Won et al., 2016).
Differences	Age range varied, exploring all ages from 18 onwards (Kornstein et al., 2010; Sherr et al., 2016; Son & Lee, 2025; Usall et al.,	Some studies (7) only included one menopausal stage (Gojdz et al., 2013; Hendriks et al, 2024; Kułak-Bejda et al., 2023; Pinto-	One was a case series (Blackmore et al., 2008), three were prospective cohort (Hunt et al., 1987; Pinto-Meza et al., 2006;

	2009; Weiss et al., 2016; Won et al., 2016). Some studies (6) did consider the impact of socioeconomic (Son & Lee, 2025) and cultural factors on menopause-related health outcomes, including social support (An et al., 2022; Kułak-Bejda et al., 2023; Murphy et al., 2013; Nakanishi et al., 2023) and self-perception (Gojdz et al., 2013). Some of the studies (7) did not look at comorbidities and their effect on menopause (Gojdz	Meza et al., 2006; Schairer et al., 1997; Studd, 2014; Won et al., 2016). Few studies (5) mentioned surgically induced menopause (Blackmore et al., 2008; Hunt et al., 1987; Kornstein et al., 2010; Son & Lee, 2025; Weiss et al., 2016). Two studies explored the time of life menopause started at i.e. early or natural (Kim Ji-Su et al., 2021; Ryu et al., 2022).	Schairer et al., 1996) and one was longitudinal cohort (Nakanishi et al., 2023). Two studies were post-mortem analyses (Schairer et al. 1997; Hunt et al., 1987). Two studies looked at the effect of HRT on suicidality (Hunt et al. 1987; Schairer et al., 1997).

	et al., 2013; Kim Ji-Su et al., 2021; Kornstein et al., 2010; Kułak-Bejda et al., 2023; Murphy et al., 2103; Pinto-Meza et al., 2006; Studd, 2014).		

Supplementary Table 2. Mixed Methods Appraisal Tool Results for Included Studies.

Study ID	Study design	MMAT criteria	MMAT Score (%)	Reason for not scoring maximum
An et al. (2022)	Comparative cross-sectional	4/5	80%	Limited consideration of confounding factors (No detailed control for potential confounders influencing depressive symptoms and suicidality).
Blackmore et al. (2008)	Case series	3/5	60%	Small sample size (5 cases), lack of control group, reliance on retrospective data collection.
Clements et al. (2025)	Longitudinal cohort	4/5	80%	Did not directly measure menopause status; although robust in clinical data collection, lacked full control of all potential confounders such as HRT use, hormonal levels, and SES.
Gojdz et al. (2013)	Cross-sectional	4/5	80%	Limited consideration of confounding factors (No detailed

				control for sociodemographic variables and lifestyle-related variable).
Hunt et al. (1987)	Prospective cohort	3/5	60%	Limited consideration of confounding factors (Did not account for all potential confounders such as socioeconomic status and lifestyle factors in the analysis), does not provide detailed statistical analyses of the data.
Hendriks et al. (2024)	Observational cohort.	3/5	60%	No control group; relied on self-reported data; limited adjustment for confounding factors such as mental health history, socioeconomic status, and HRT use.
Kim et al. (2021)	Cross-sectional	3/5	60%	Limited consideration of confounding factors (No detailed control for potential confounders influencing depressive symptoms and suicidality), limited generalisability.
Kornstein et al. (2010)	Comparative cross-sectional	4/5	80%	Limited consideration of confounding factors (Relied on self-reported data, which can introduce bias, and did not fully control for all potential confounding variables such as hormonal therapy use, comorbid

				mental health conditions, and socio-economic status).
Kułak-Bejda et al. (2023)	Comparative cross-sectional	3/5	60%	Limited consideration of confounding factors (No multivariate analysis), reliance on self-reported data.
Murphy et al. (2013)	Comparative cross-sectional	3/5	60%	Small sample size (41 participants), potential bias in focus group composition, lack of control for confounding factors (did not control for variables such as educational level, marital status, and cultural differences that might affect perceptions of menopause).
Nakanishi et al. (2023)	Longitudinal cohort	4/5	80%	Limited consideration of confounding factors (No detailed control for hormonal and lifestyle variables that might influence outcomes).
Pinto-Meza et al. (2006)	Prospective cohort	4/5	80%	Limited control for confounding factors (Did not control for all sociodemographic variables and health behaviours that could influence the outcomes such as smoking, alcohol consumption, and mental health history).
Ryu et al. (2022)	Cross-sectional	4/5	80%	Limited control for confounding factors (No detailed adjustment for potential confounders such as

				lifestyle factors and mental health history).
Schairer et al. (1996)	Prospective cohort	4/5	80%	Limited control for confounding factors (Did not fully account for variations in healthcare access and genetic predispositions).
Sherr et al. (2016)	Comparative cross-sectional	4/5	80%	Limited control for confounding factors (No detailed control for socioeconomic status and other potential confounders influencing mental health outcomes such as access to support services).
Son & Lee (2025)	Cross sectional	4/5	80%	Although large and representative, relied on self-reported menopausal status and suicidal behaviours; limited adjustment for clinical diagnoses and unmeasured psychosocial variables.
Studd (2014)	Cross-sectional survey	3/5	60%	Potential selection bias (Participants self-selected to join the study, possibly leading to non-representative sample), limited control for confounding factors such as socioeconomic status and pre-existing health conditions.
Usall et al. (2009)	Cross-sectional	4/5	80%	Limited control for confounding factors (Relied on self-reported menopausal status, no hormonal validation, and limited control for other psychosocial factors).

Weiss et al. (2016)	Cross-sectional	4/5	80%	Retrospective data collection issues (Possible recall bias), limited control for confounding factors such as history of depression and lifestyle factors.
Won et al. (2016)	Cross-sectional	4/5	80%	Potential recall bias (Relied on self-reported data from past year), limited control for unmeasured confounders such as stress levels and environmental factors.

Supplementary Table 3. Reporting of Psychiatric Diagnoses and BMI Across Included Studies.

Author	**Psychiatric Diagnosis (†)**	**BMI (‡)**
An et al. (2022)	Not reported.	Not reported.
Blackmore et al. (2008)	Participants with a history of bipolar affective postpartum psychosis.	Not reported.
Clements et al. (2025)	Not specified; collected data on current psychiatric care, previous self-harm, and psychosocial assessment, but no formal diagnostic criteria (e.g. DSM/ICD) used.	Not reported.
Gojdź et al. (2013)	Not reported.	Not reported.

Hendriks et al. (2024)	Not specified; suicidal ideation measured via PHQ-9, but no formal diagnosis or clinical interview conducted.	Not reported.
Hunt et al. (1987)	Not specified; long-term mortality and health surveillance study, no mental health focus.	Not reported.
Kim Ji-Su et al. (2021)	Not specified; assessed self-reported depression without formal diagnosis.	Mean BMI = 24.12.
Kornstein et al. (2010)	Participants with a major depressive disorder diagnosis.	Not reported.
Kułak-Bejda et al. (2023)	Not specified; assessed self-reported depression without formal diagnosis.	Not reported.
Murphy et al. (2013)	Not reported.	Not reported.
Nakanishi et al. (2023)	Not specified; focused on suicidal ideation without formal diagnoses.	Not reported.
Pinto-Meza et al. (2006)	Participants with a depression diagnosis.	Not reported.
Ryu et al. (2022)	Not specified; analysed suicidal ideation without formal diagnoses.	Mean BMI = 24.20 (SD = 3.30).
Schairer et al. (1996)	Not reported.	Not reported.

Sherr et al. (2016)	Not specified; discussion of mental health in HIV+ women, but no formal psychiatric data presented.	Not reported.
Son & Lee (2025)	Not specified; depression assessed via self-reported 2-week low mood but no formal diagnostic classification.	Used as a covariate in regression analyses (categorised by underweight, normal, obese). Mean and SD not provided.
Studd (2014)	Not specified; focused on reproductive depression without formal diagnosis.	Not reported.
Usall et al. (2009)	Not specified; examined suicidal ideation across hormonal life stages, no formal diagnoses	Not reported.
Weiss et al. (2016)	Participants with a major depressive disorder diagnosis.	Not reported.
Won et al. (2016)	Not specified; self-reported depression without formal diagnoses.	Mean BMI = 24.02 (depressed), 23.06 (non-depressed).

Chapter 4: Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort

Findings from the systematic review in Chapter 3 identified a critical lack of empirical research investigating suicidality as a distinct outcome during the menopausal transition. While several studies reported associations between hormonal changes and mood disturbance, suicidality was rarely the primary focus, and few studies examined the influence of hormone treatment regimens, such as oestrogen, progesterone, or testosterone, on suicidal risk. Moreover, no existing studies to our knowledge have directly compared suicide risk across different hormone therapies or done so using longitudinal data. This chapter therefore presents the first known study to explore changes in suicidality over time in relation to specific hormone treatment combinations within a clinical cohort. Using routinely collected data from a specialist menopause clinic, it examines the effects of different hormone regimens on depressive symptoms, suicidality, and menopause-specific psychological distress. It also considers lifestyle covariates, including BMI, smoking, and antidepressant use, and examines the impact of treatment timing. In addition to evaluating symptom change, the study explores whether certain combinations of hormones are associated with greater psychological benefit, and which subgroups may require more tailored intervention.

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Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort

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Abstract

Background

Menopausal transition is increasingly recognised as a period of psychological vulnerability, yet suicidality remains under-assessed. Hormone replacement therapy (HRT) may influence mood symptoms, but its mental health effects – particularly regarding suicidality – are poorly understood.

Aims

To evaluate changes in depressive symptoms, menopause-related distress, and suicidality among menopausal women attending a specialist clinic, and to explore whether outcomes differed across HRT regimens and baseline risk factors (e.g. BMI, antidepressant use, and baseline suicidality).

Method

We analysed routinely collected data from 957 women attending a UK menopause clinic. All participants received some form of treatment following their initial consultation; there was no formal no-treatment control group. Participants completed the PHQ-9 and Menopausal Depression Scale (MENO-D) at baseline and follow-up (2-6 months later). Mixed-design ANOVAs assessed changes over time, including interaction effects for HRT type and baseline risk factors (BMI, smoking, antidepressant use). Because PHQ-9 item 9 (suicidality) was highly skewed, a supplementary binary logistic regression was conducted to confirm the robustness of the ANOVA findings for this outcome.

Results

Depressive symptoms and menopause-related psychological distress significantly declined over time (~46% reduction on average). The largest improvements were observed among women receiving oestrogen-progesterone-testosterone combinations (E+P+T), although similar gains were also seen in oestrogen-progesterone (E+P) and oestrogen-testosterone (E+T) groups. Suicidality (PHQ-9 item 9) decreased by 92% among those with baseline ideation, but this was not moderated by HRT type. Supplementary logistic regression analyses confirmed that reductions in suicidality were independent of HRT regimen, with antidepressant use emerging as the only

significant predictor of follow-up ideation. Self-worth (MENO-D item 4) also improved but similarly showed no significant moderation by HRT regimen. Higher BMI was associated with worse baseline mental health but did not moderate treatment outcomes.

Conclusions

Combined HRT, including formulations with testosterone, was associated with substantial improvements in mental health outcomes. Suicidality appeared as a distinct symptom profile, often underdetected by general depression scores. Supplementary logistic regression confirmed the robustness of these findings, indicating that reductions in suicidality were independent of HRT regimen. However, findings are exploratory and should be interpreted cautiously due to the lack of a control group, the observational design, and small sample sizes in some HRT subgroups. These results highlight the need for menopause-sensitive mental health assessments and integration of psychological screening into routine menopausal care.

Keywords

Hormone replacement therapy, menopause, depression, suicidality, testosterone

Introduction

The menopausal transition is increasingly recognised as a period of heightened psychological vulnerability. Between 10% and 65% of women experience mental health challenges during this time, including depression and suicidality [1, 2, 3]. Hormonal fluctuations are strongly implicated in mood instability [4], yet the mental health impacts of menopause remain under-recognised in many clinical settings. Hormone replacement therapy (HRT) is often prescribed to manage somatic and psychological symptoms, with growing support for its role in alleviating low mood and anxiety with or without additional psychiatric support [5, 6, 7, 8]. However, evidence remains mixed – particularly regarding its efficacy for severe depression – prompting questions about optimal treatment combinations and individual differences in response [8, 9, 10]. Emerging evidence suggests that the psychological impact of HRT varies depending on the type of hormone used, delivery method, and individual factors [11]. Oestrogen remains the most extensively studied and is associated with improvements in mood, cognition, and stress sensitivity, particularly when administered transdermally during perimenopause [16, 17]. Testosterone may offer additional benefits for mood, motivation, and energy, potentially through both direct neurochemical effects on dopamine and serotonin pathways [25, 8] and indirect improvements in vasomotor symptoms, libido, and sleep quality [11, 10] – though findings are mixed and access remains limited [25, 29]. In contrast, progesterone's effects on mental health appear more variable, with some studies suggesting anxiolytic properties and others reporting minimal or negative effects [32, 27]. These discrepancies highlight the need for more targeted research into hormone-specific and combination regimens for mood support during menopause.

Suicidality is among the most concerning yet under-investigated aspects of menopause-related distress. While midlife women have the highest suicide rates among females in the UK [15], their psychological symptoms are often overlooked, minimised, or misattributed to general ageing or lifestyle changes [16]. Standard tools like the Patient Health Questionnaire-9 (PHQ-9; [47]) are commonly used to assess depressive symptoms, but they were not designed for the menopausal context. Crucially, they may under-detect suicidality when it's treated merely as a component of

total depression scores, despite growing evidence that suicidal ideation can manifest independently [17, 18].

The Menopausal Depression Scale (MENO-D; [19]) was developed to address this gap by capturing menopause-specific symptoms often missed by general scales. It was validated in a midlife female cohort and demonstrated strong psychometric properties. The scale includes ten domains specific to menopausal experience, such as paranoia, libido changes, self-worth, and cognitive symptoms. Importantly, the "self" domain contains an item on low self-worth that, at its highest severity level, references suicidal thinking. While not yet widely adopted, it may offer a more accurate lens on the psychological toll of menopause than general depression scales alone.

This study aimed to examine how different HRT regimens influence mental health outcomes, including depressive symptoms, menopause-related distress, and suicidality, among women attending a specialist menopause and wellbeing clinic. We hypothesised that combined HRT regimens, especially those including oestrogen and testosterone, would be associated with greater symptom improvements than progesterone-only treatments. All participants received treatment following their consultation; therefore, there was no formal no-HRT control group. We also explored whether suicidality and self-worth would change over time and whether treatment effects varied based on baseline risk factors such as BMI, antidepressant use, and initial symptom severity. By using both general (PHQ-9) and menopause-specific (MENO-D) measures, this study sought to clarify the psychological impact of HRT and offer more tailored insights into mental health care during the menopausal transition.

Method

Design and Participants

This longitudinal, observational study used routinely collected clinical data from 957 patients attending a UK-based private menopause clinic. All participants had completed at least one Patient Health Questionnaire-9 (PHQ-9) and one Menopausal Depression Scale (MENO-D) assessment at two timepoints (baseline and follow-up).

Inclusion criteria for the analytic sample were: (1) completion of baseline (T1) and follow-up (T2) PHQ-9 and MENO-D scores; (2) prescription of systemic HRT following clinical consultation; and (3) a classifiable HRT regimen based on available prescription data. Participants with missing primary outcome data or unclear HRT classification were excluded from treatment-based analyses but retained in descriptive reporting where possible. No exclusions were made based on age, ethnicity, or comorbidities. Participant characteristics are detailed in Table 1. For descriptive purposes, Table 1 compares participants based on whether they were already using HRT prior to their initial consultation. These pre-consultation categories do not reflect treatment groups but rather baseline starting points to contextualise later prescribing patterns. Menopause stage and depression diagnosis were recorded during initial clinic consultations by General Practitioners (GPs) based on patient self-report and clinical judgement. These diagnoses were extracted from routine clinical notes and not independently verified by the research team.

Table 1. Participant Characteristics Overall and by Baseline HRT Use (n = 957)

Variable	**Category**	**n (%) / Mean (SD)**	**HRT at baseline (n = 492)**	**No HRT at baseline (n = 465)**
Age		51.21 (6.28)	51.68 (5.29)	50.70 (7.20)
Weight (kg)		72.20 (16.89)	71.94 (16.12)	72.46 (17.76)
Height (m)		1.66 (0.07)	1.66 (0.07)	1.66 (0.07)
BMI		26.26 (5.90)	26.16 (5.71)	26.36 (6.11)
Ethnicity				
	White	906 (94.7%)	464 (94.3%)	442 (95.1%)
	Black	3 (0.3%)	1 (0.2%)	2 (0.4%)
	Asian	16 (1.7%)	8 (1.6%)	8 (1.7%)
	Mixed/Other	32 (3.3%)	19 (3.9%)	13 (2.8%)
Alcohol Use	Yes	678 (70.8%)	394 (80.1%)	335 (72.0%)
Smoking Status	Yes	36 (3.8%)	17 (3.5%)	19 (4.1%)

Menopause Diagnosis				
	Perimenopause	459 (48.0%)	196 (39.8%)	263 (56.6%)
	Menopause	359 (37.5%)	208 (42.3%)	151 (32.5%)
	Other[a]	139 (14.5%)	88 (17.9%)	51 (11.0%)
Antidepressant Use	Yes	181 (18.9%)	94 (19.1%)	87 (18.7%)
HRT Use at Baseline	Yes	492 (51.4%)	492 (100%)	0 (0.0%)
Depression Diagnosis	Yes	294 (30.7%)	146 (29.7%)	148 (31.8%)

Note. [a] "Other" refers to ambiguous or non-standard diagnostic entries (e.g. surgical, early, or late menopause). All cases were retained in the analyses. Columns represent participant characteristics based on baseline HRT status, i.e., whether they were taking any form of HRT at the time of first clinic contact. These groupings were used to describe the sample only and do not reflect final treatment groups used in analyses.

HRT Classification

Participants were grouped into HRT treatment categories based on the combination of hormones received after their initial consultation: oestrogen (E), progesterone (P), and testosterone (T). The most common regimens included E+P (n = 326, 34.1%), T only (n = 281, 29.4%), and E+P+T (n = 210, 21.9%). Smaller groups received E only (n = 49, 5.1%), E+T (n = 66, 6.9%), P+T (n = 13, 1.4%), or P only (n = 9, 0.9%). A very small number of participants (n = 3, 0.3%) could not be classified into any systemic HRT group following their initial consultation and were therefore excluded from treatment-based analyses but retained in descriptive statistics. There was no formal 'no HRT' control group, as all participants were prescribed some form of treatment post-consultation.

Baseline HRT regime was also recorded, with 48.6% (n = 465) of participants not using HRT prior to entering the clinic. Among those already on treatment, the majority were

taking E+P. Non-systemic HRT users and participants with unclassifiable prescriptions were excluded from HRT-based comparisons but included in descriptive analyses.

Measures

Depression and Suicidality

Depressive symptoms over the past two weeks were assessed using the 9-item Patient Health Questionnaire (PHQ-9), a widely used screening tool for depression. Total scores range from 0 to 27, with higher scores indicating greater symptom severity. Commonly used clinical cut-offs are: 5 (mild), 10 (moderate), 15 (moderately severe), and 20 (severe depression) [47]. Item 9 of the PHQ-9 assesses suicidal ideation: *"Thoughts that you would be better off dead or of hurting yourself in some way."* This item was analysed separately and recoded into a binary variable (0 = no ideation; 1-3 = any ideation). Internal consistency in the current sample was high (α = .82).

Menopause-Related Psychological Distress

The Menopause Rating Scale for Depression (MENO-D) was used to assess psychological distress specific to menopause. The scale comprises 12 items rated on a 0–4 scale (total score range: 0 to 48), with higher scores reflecting more severe symptoms across domains such as irritability, paranoia, self-esteem, memory, and motivation [19]. Scores between 20–24 indicate mild perimenopausal depression requiring monitoring, 24–32 suggest moderate depression requiring treatment, and scores above 32 reflect severe depression requiring treatment. Item 4 specifically asks about *"Feelings of low self-worth or failure,"* with the highest response category indicating thoughts of suicide. This item was analysed separately as a proxy indicator of suicidality. Internal consistency in this sample was acceptable (α = .80).

Covariates

Covariates included BMI, smoking status, antidepressant use, baseline HRT status, time between assessments, and baseline suicidality. Variables were included in models based on clinical relevance and bivariate correlations. For example, smoking was only included in models where it showed a significant association with the outcome variable. Antidepressant use was retained across all models due to its clinical importance as a

proxy for active psychiatric treatment likely to influence mood-related symptoms, regardless of statistical significance.

Procedure

Clinical data were extracted retrospectively from anonymised records of patients attending routine appointments at a specialist menopause clinic. Participants completed the PHQ-9 and MENO-D as part of standard outcome monitoring. Two timepoints were analysed: baseline (T1) and follow-up (T2), which occurred on average 107.2 days later (SD = 22.6; range = 59–338 days). Additional timepoints (T3–T5) were not included in the analyses due to high rates of missing data (59% missing at T3, 90% at T4, and 98% at T5), which limited statistical power and model stability. Analyses with >40% missing data on key variables lack confirmatory value [20], and recent simulation studies [21] suggest that while multiple imputation can perform adequately under moderate missingness, its robustness declines beyond 50%, particularly when missingness is not at random or when model assumptions are violated. We therefore determined that including T3 would reduce rather than strengthen analytic robustness, and limited analyses to the most complete timepoints (T1–T2).

To be included in the final analysis, participants had to have complete data for at least one PHQ-9 and one MENO-D at both T1 and T2. The final analytic sample ranged from 790 to 898 participants, depending on variable completeness. Item-level analyses (e.g., suicidality, self-worth) allowed for larger sample sizes (up to n = 946), as fewer covariates were required.

Data were analysed using mixed-design ANOVAs to assess changes in depression, suicidality, and menopause-related distress over time. Three-way interaction models (Time × HRT Regimen × Baseline HRT Use) were conducted without covariates to preserve model stability and maximise statistical power for exploratory effects. Bonferroni corrections were applied to all follow-up comparisons to adjust for multiple testing and reduce the risk of Type I error.

Because PHQ-9 item 9 (suicidality) was highly skewed, a supplementary binary logistic regression was conducted to ensure the robustness of the ANOVA findings using an

assumption-appropriate model. Both analyses were retained to provide complementary perspectives on within-person change and between-group risk.

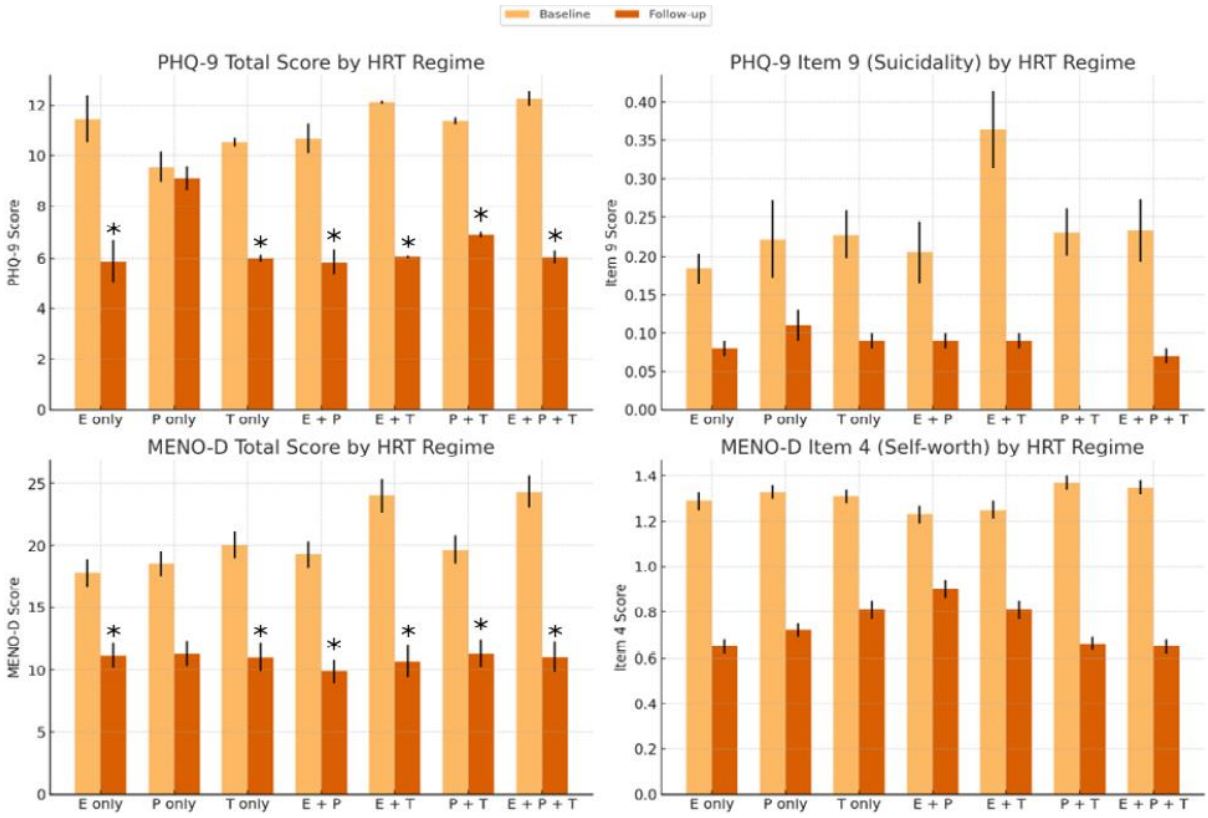
Results

Sample Characteristics

At baseline, 16.6% of participants (n = 159) reported suicidal ideation, which dropped to 6.8% (n = 65) at follow-up. Depressive symptoms (PHQ-9 total) decreased from a mean of 11.12 (SD = 5.76) to 5.99 (SD = 4.77), falling from within the moderate depression range to mild, while menopause-related psychological distress (MENO-D total) declined from 19.67 (SD = 7.74), just below the threshold for mild perimenopausal depression, to 10.58 (SD = 6.92), indicating minimal symptoms well below clinical concern. Self-worth (MENO-D item 4) scores improved from 1.36 to 0.68, and suicidal ideation (PHQ-9 item 9) dropped from 0.23 to 0.08. Figure 1 illustrates the changes in mental health outcomes between baseline and follow-up for the full sample.

All participants received treatment after their initial consultation. Those not on HRT at baseline began treatment thereafter; however, due to the absence of a no-treatment comparator, results must be interpreted with caution regarding natural symptom progression.

Figure 1. Change in Questionnaire Scores from Baseline to Follow-Up Across Four Mental Health Outcomes



Note. Error bars represent ±1 standard error of the mean. Asterisks indicate significant within-group improvement from T1 to T2 ($p < .001$). Y-axis is scaled to observed data to better illustrate meaningful variation.

Correlation Analyses

PHQ-9 and MENO-D total scores were strongly correlated (r = .776, p < .001), indicating substantial overlap in general and menopause-specific depressive symptoms. PHQ-9 item 9 (suicidality) showed weak but significant correlations with both PHQ-9 total (r = .070, p = .030) and MENO-D total (r = .066, p = .043). MENO-D item 4 (self-worth) was strongly associated with MENO-D total (r = .704, p < .001) but not significantly related to PHQ-9 item 9 (r = .025). These patterns support the view that suicidality is only partially captured by general depression severity. Lifestyle and clinical variables were also examined, as shown in Table 2.

Table 2. Pearson Correlation Matrix for Mental Health Outcomes and Covariates

Variable	PHQ-9 Total	MENO-D Total	MENO-D Q4 (Self-worth)	PHQ-9 Q9 (Suicidality)
PHQ-9 Total	—	.776**	.646**	.070*
MENO-D Total	.776**	—	.704**	.066*
MENO-D Q4 (Self-worth)	.646**	.704**	—	.025
PHQ-9 Q9 (Suicidality)	.070*	.066*	.025	—
Antidepressant Use	.194**	.140**	.104**	.031
BMI	.162**	.197**	.122**	.005
Smoking	.069*	.061	.026	.036

Note. *p < .05. **p < .01.

Depression Symptoms (PHQ-9 Total)

A mixed ANOVA revealed a significant reduction in depressive symptoms over time, $F(1, 890) = 32.89$, $p < .001$, $\eta^2 = .036$. A significant Time × HRT Regimen interaction, $F(7, 890) = 3.56$, $p = .001$, $\eta^2 = .027$, indicated that symptom improvement varied by treatment type. There was no significant three-way interaction with baseline HRT use.

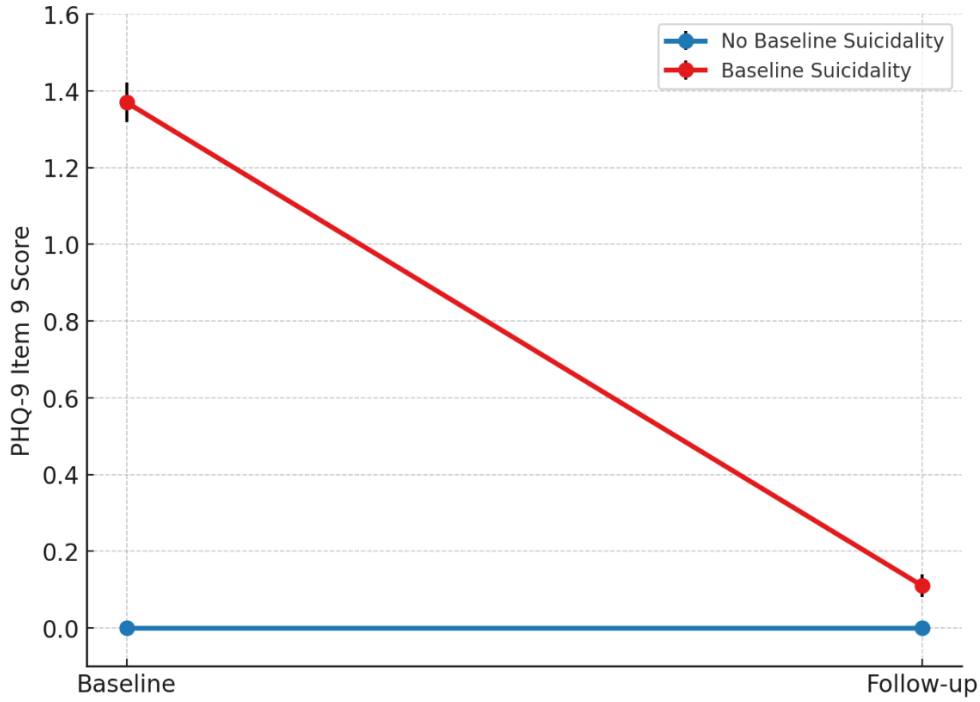
Follow-up paired samples t-tests showed significant reductions in PHQ-9 scores across all HRT groups except progesterone-only. The greatest improvements occurred in the E+P+T group (M = 12.26 to 6.00, $p < .001$, $d = 1.10$), E+T (M = 12.12 to 6.67, $p < .001$, $d = 1.10$), and E+P (M = 10.69 to 5.24, $p < .001$, $d = 0.99$). Large but comparatively smaller effect size reductions were also observed in the testosterone-only group (M = 10.54 to 5.99, $p < .001$, $d = 0.84$), oestrogen-only group (M = 11.45 to 5.88, $p < .001$, $d = 0.96$), and the progesterone-and-testosterone group (M = 11.38 to 6.92, $p = .003$, $d = 0.84$). The

progesterone-only group showed no significant change in PHQ-9 scores (M = 9.56 to 9.11, p = .356, d = 0.27).

Suicidality (PHQ-9 Item 9)

There was no main effect of time or Time × HRT Regimen interaction on suicidality scores. However, a strong Time × Baseline Suicidality interaction emerged, F(1, 944) = 867.56, p < .001, η^2 = .479. To further explore this, a paired samples t-test was conducted within the subgroup who reported suicidal ideation at baseline (n = 160), with mean scores dropping from 1.37 (SD = 0.65) to 0.11 (SD = 0.38), t(159) = 21.35, p < .001, d = 1.69, as shown in Figure 2. This effect was not moderated by HRT type or baseline treatment status.

Figure 2. Changes in PHQ-9 Item 9 (Suicidality) Scores by Baseline Suicidality Status



Note. Error bars represent ±1 standard error of the mean.

The supplementary binary logistic regression model included antidepressant use, baseline suicidality, baseline HRT status, and time between appointments as covariates. Results confirmed that suicidality at follow-up was not predicted by HRT

regimen ($\chi^2[3] = 0.47$, p = .925), while antidepressant use remained a significant predictor (aOR = 2.44, 95% CI [1.41-4.21], p = .001). The overall model fit was good (Hosmer-Lemeshow p = .97, Nagelkerke $R^2 = .034$), corroborating the ANOVA result that reductions in suicidal ideation were not moderated by HRT type.

Menopausal Distress (MENO-D Total)

Psychological distress significantly decreased over time, $F(1, 890) = 59.41$, $p < .001$, $\eta^2 = .062$. A Time × HRT Regimen interaction was also significant, $F(7, 890) = 2.43$, $p = .018$, $\eta^2 = .019$, suggesting differential treatment effects. No significant three-way interaction with baseline HRT use was found.

Post-hoc paired samples t-tests showed all groups except progesterone-only experienced significant reductions in distress. The largest improvements were again observed in the E+P+T (M = 24.34 to 11.07, p < .001, d = 1.33), E+T (M = 24.00 to 10.73, p < .001, d = 1.39), and E+P (M = 19.27 to 9.93, p < .001, d = 1.33) groups. Significant reductions were also seen in the testosterone-only group (M = 21.11 to 10.31, p < .001, d = 1.25), oestrogen-only group (M = 21.14 to 10.49, p < .001, d = 1.33), and the progesterone-and-testosterone group (M = 22.38 to 11.08, p = .004, d = 1.16). No significant change was found in the progesterone-only group (M = 19.11 to 18.78, p = .738, d = 0.10).

Self-Worth (MENO-D Item 4)

A small but significant main effect of time was found, $F(1, 890) = 6.09$, $p = .014$, $\eta^2 = .007$, with mean self-worth scores improving from 1.29 (SD = 0.85) to 0.71 (SD = 0.72). However, there were no significant Time × HRT Regimen or three-way interaction effects, suggesting this improvement was general rather than treatment-specific. Table 3 summarises all the mixed ANOVA models used in the analysis, including the factors tested, covariates included, and statistical outputs.

Table 3. Summary of Main ANOVA Models by Outcome, Interaction Effects, and Covariates

Outcome Variable	**Main Effect of Time**	**Time × HRT Regimen**	**Time × Baseline HRT Use × Regimen**	**Covariates**
PHQ-9 Total (Depression)	$F(1, 890) = 32.89$, $p < .001$, $\eta^2 = .036$	$F(7, 890) = 3.56$, $p = .001$, $\eta^2 = .027$	$F(7, 890) = 1.47$, $p = .179$	Smoking, antidepressants, time between T1 and T2, HRT at baseline, suicidality
PHQ-9 Item 9 (Suicidality)	$F(1, 944) = 0.83$, $p = .362$	$F(7, 944) = 0.94$, $p = .473$	$F(7, 944) = 1.35$, $p = .223$	BMI, smoking, antidepressants, time between T1 and T2, HRT at baseline, suicidality
MENO-D Total (Menopausal distress)	$F(1, 890) = 59.41$, $p < .001$, $\eta^2 = .062$	$F(7, 890) = 2.43$, $p = .018$, $\eta^2 = .019$	$F(7, 890) = 0.99$, $p = .442$	BMI, antidepressants, time between T1 and T2, HRT at baseline, suicidality
MENO-D Item 4 (Self-worth)	$F(1, 890) = 6.09$, $p = .014$, $\eta^2 = .007$	$F(7, 890) = 0.91$, $p = .503$	$F(7, 890) = 1.45$, $p = .181$	BMI, antidepressants, time between T1 and T2, HRT at baseline, suicidality

Discussion

This study aimed to examine the psychological effects of different HRT regimens among menopausal women, focusing on depressive symptoms, suicidality, and menopause-related psychological distress. The findings show that mental health symptoms improved over time across most treatment groups, with the most substantial improvements observed in those receiving combined oestrogen, progesterone, and testosterone, alongside similarly large effects in the oestrogen-progesterone (E+P) and oestrogen-testosterone (E+T) groups. Importantly, suicidality – though only weakly associated with depression scores – declined markedly in those who reported ideation at baseline, reinforcing the need to assess it as a distinct symptom during the menopausal transition.

Elevated Psychological Distress and Suicidality at Entry

The high rate of suicidal ideation at clinical entry – reported by 16.6% of participants – suggests that many women accessing menopause services are doing so in a state of significant psychological distress. This is consistent with broader literature indicating that midlife women, particularly during perimenopause, experience a spike in suicidal thoughts, often under-recognised in healthcare settings [3, 22]. While it is possible that elevated rates in the present sample partly reflect the nature of the clinic – a specialist service to which individuals may self-refer during acute distress – this does not negate the relevance of the findings. Rather, it highlights the unmet needs and urgency that drive help-seeking among this population, many of whom report long-standing difficulties prior to referral. The gap between distress prevalence and clinical response may stem from the continued medicalisation or minimisation of menopausal symptoms [16], coupled with diagnostic tools that are poorly attuned to menopause-specific experiences.

Although national suicide statistics reflect confirmed deaths rather than ideation [15], this study supports the argument that suicidal thinking is more prevalent among menopausal women than previously assumed, and that the menopause itself may represent a high-risk psychological state, not simply a hormonal shift. This aligns with

neurobiological theories framing perimenopause as a time of neurochemical sensitivity, particularly in systems involved in mood regulation [23, 4].

Mental Health Improvements and Hormone Regimen Differences

Mental health outcomes improved across the study period, but not uniformly. At baseline, PHQ-9 scores across treatment groups ranged from 9.5 to 12.3, indicating that many participants were experiencing moderate depressive symptoms at the point of entry. MENO-D scores similarly suggested clinically meaningful distress. These elevated scores, alongside the 16.6% of participants reporting active suicidal ideation at baseline, underscore the importance of systematic screening for psychological distress and suicidality within menopause care settings. Participants receiving combined oestrogen, progesterone, and testosterone experienced the most substantial and consistent reductions in depressive symptoms and psychological distress. These findings support prior work highlighting oestrogen's stabilising effects on serotonergic and dopaminergic systems [24], and further suggest that testosterone may augment mood, motivation, and energy: factors critical to psychological recovery [25, 26]. While oestrogen alone has been shown to improve mild to moderate depression in perimenopausal women [27, 28], the present study adds to growing evidence that multi-hormonal regimens may be more effective, especially when symptoms are severe or complex [29, 8]. However, given the exploratory nature of these subgroup analyses and the small sample sizes in several HRT regimens, these findings should be interpreted with caution. The strong effect sizes observed across groups were generally comparable, suggesting that different hormone combinations may offer broadly similar levels of psychological benefit rather than clear superiority of one regimen over another. The lack of a non-treatment control group further limits causal attribution and prevents firm conclusions about whether improvements were driven solely by HRT or by non-specific therapeutic effects.

While improvements were most pronounced in certain HRT regimens, it is also possible that mental health gains reflected a broader combination of factors. Participants may have benefited from holistic menopause care, including psychoeducation, improved sleep, symptom validation, or concurrent support for anxiety, relationship, or occupational stressors [48]. Lifestyle changes, antidepressant use, or progression

through the menopausal transition itself may also have contributed to psychological stabilisation [49, 50, 51]. Given the lack of a non-treatment control group, improvements observed across the study period may reflect both treatment-specific and non-specific effects, and should be interpreted within this broader clinical context.

Conversely, the lack of improvement in the progesterone-only group reflects previous literature highlighting the limited antidepressant properties of progesterone in isolation, as some studies suggest that progesterone may even worsen mood symptoms in susceptible individuals [30, 27]. However, this result should be interpreted cautiously due to the very small sample size in this group (n = 9). There is also evidence pointing to potential anxiolytic or stabilising effects in certain contexts [31, 32], suggesting that progesterone's psychological impact may vary by symptom type, delivery method, or individual sensitivity. Future studies should explore these nuances in more detail.

Timing of Treatment and Perimenopausal Vulnerability

Around half of the sample was perimenopausal at baseline, which aligns with literature identifying this phase as a window of increased risk for mood disturbance and suicidality [2]. Hormonal fluctuations during perimenopause may induce mood symptoms that are acute, episodic, and reactive; distinct from the more stable presentation seen in major depressive disorder [19, 33]. These symptoms may also be more responsive to hormonal intervention, particularly when treatment is initiated early. The "window of opportunity" hypothesis [34, 35] suggests that initiating HRT near the onset of menopause yields greater benefit across both somatic and psychological domains. Although baseline HRT status did not significantly moderate treatment effects in this study, improvements observed among those initiating treatment during the study period tentatively support the importance of treatment timing. However, conclusions are limited by the lack of detailed data on HRT duration prior to baseline. Similar patterns have been observed in bone density and cardiovascular outcomes, where earlier intervention appears to enhance biological responsiveness [36]. However, due to high levels of missingness, extended timepoints (e.g., T3) were excluded from analysis, as their inclusion would have introduced analytic instability. This decision aligns with established recommendations regarding missing data thresholds [20, 21].

Suicidality as a Distinct Symptom Dimension

Suicidal ideation declined by over 90% among those who reported it at baseline, with a large effect size, but this improvement was not driven by specific hormone regimens. Instead, the Time × Baseline Suicidality interaction suggests that participants presenting in acute distress improved substantially regardless of treatment type. While this could partly reflect regression to the mean, the magnitude and consistency of improvement – paired with reductions in depression and self-worth measures – indicates meaningful clinical change for this high-risk subgroup. Notably, suicidality showed only weak associations with total PHQ-9 and MENO-D scores, supporting research that it can occur independently of general depression [17, 18]. This challenges the tendency to treat suicidality as just another symptom of depression and underscores the importance of assessing it directly, particularly in perimenopausal populations, where emotional reactivity and cognitive shifts may heighten risk outside of classical depressive profiles.

To ensure these findings were not influenced by the non-normal distribution of PHQ-9 item 9, a supplementary binary logistic regression was performed. This model treated suicidality as a binary outcome and included the same covariates as the ANOVA (antidepressant use, baseline HRT status, baseline suicidality, and time between appointments). The logistic regression confirmed that HRT regimen did not predict suicidality at follow-up, while antidepressant use remained a significant independent predictor. The consistency between the ANOVA and logistic regression findings strengthens confidence that the observed reduction in suicidal ideation reflects a genuine improvement among those presenting with baseline risk, rather than an artefact of analytic assumptions.

The MENO-D item on self-worth, used as a proxy measure, also improved over time but was not strongly correlated with PHQ-9 suicidality scores. This further supports the need for menopause-sensitive tools that capture suicidality as a specific and nuanced construct rather than relying on indirect indicators.

Value of Menopause-Specific Measures

While PHQ-9 and MENO-D total scores were highly correlated, the MENO-D was developed specifically to capture menopause-related psychological features that conventional depression scales may overlook, such as irritability, paranoia, and libido changes [19]. These symptom dimensions may represent a distinct profile of perimenopausal depression [37, 38], which often manifests more as mood instability than persistent low mood. Although the two scales showed convergence in this sample, the value of the MENO-D lies in its potential to detect cases that would otherwise go unflagged by generic tools. The high correlation observed in this sample may reflect the severity and breadth of symptoms reported by participants, with distress manifesting across both general and menopause-specific domains. This convergence suggests that, in highly symptomatic populations, general depression and menopause-specific mood symptoms may become more tightly intertwined.

Given the unique hormonal and psychological dynamics of perimenopause, further validation of menopause-specific scales is needed. Combining these with general tools may offer a more complete clinical picture, helping to target interventions more effectively.

Lifestyle Factors and Treatment Response

Higher BMI was significantly associated with worse scores on depression, distress, and self-worth, consistent with literature linking elevated BMI to lower mood and self-esteem in women [35, 36]. However, BMI did not significantly moderate the effects of HRT, suggesting that hormone therapy may still be effective across weight categories. Still, there is evidence that higher BMI may alter hormone metabolism or influence pharmacodynamics [41, 42], which warrants exploration in future dosing studies.

Smoking showed only weak associations with depression and no impact on treatment response. While smoking has been linked to serotonergic dysregulation and increased depression risk [43, 44], the small proportion of smokers in this sample (≈4%) may have limited statistical power.

Time between assessments did not moderate outcomes but was controlled for in all models to account for variability in treatment exposure duration. This ensured that symptom changes were not confounded by differences in follow-up length.

Although this study was based in a UK specialist clinic, the findings have broader relevance for global mental health systems. In many regions, menopause-related psychological distress and suicidality remain under-recognised, and opportunities for early intervention are often missed. Integrating basic mental health screening into menopause services could offer a scalable strategy for reducing distress and suicide risk across diverse care settings.

Limitations

Several limitations should be considered when interpreting these findings. First, the study was observational and based on routinely collected clinical data, which limits the ability to infer causality. Without a control group, improvements may partially reflect non-specific factors such as regression to the mean, placebo effects, or increased clinical engagement rather than direct effects of HRT. Additionally, participants were recruited from a private specialist menopause clinic, which may limit generalisability to broader populations. Individuals accessing private care may differ in terms of symptom severity, socioeconomic status, health literacy, or prior treatment access compared to those using NHS services. Replication in more diverse clinical settings is needed to strengthen the applicability of these findings.

Second, HRT dosage and route of administration (e.g., oral vs. transdermal) were not captured. This is a notable limitation given that delivery method can influence both hormone levels and mood-related outcomes [45]. Additionally, duration of prior HRT use was not consistently documented in the clinical dataset and could not be reliably examined in relation to outcomes. Future studies should systematically assess and compare dosage and formulation variables, and explore the role of HRT treatment duration in more depth, given its potential impact on clinical response.

Third, some HRT subgroups – particularly the progesterone-only group – had small sample sizes, which reduced statistical power and limited the generalisability of subgroup comparisons (see Methods: HRT Classification). Additional research with more balanced group sizes is needed to confirm the differential effects observed here.

Fourth, although additional timepoints were available, T3 data were missing for 59% of participants. Including T3 would have introduced analytic instability and reduced the robustness of conclusions. Scholars argue that analyses with >40% missing data should not be considered confirmatory [20] and studies have shown that multiple imputation techniques perform poorly beyond 50% missingness, particularly when model assumptions may not hold [21]. As such, we limited analyses to the most complete timepoints (T1–T2).

Fifth, suicidality was assessed using a single item from each scale. While PHQ-9 item 9 is widely used in clinical practice, it may not fully capture the nuance and range of suicidal thinking. The use of MENO-D item 4 as a proxy for suicidality added value but was not designed for this purpose and should be interpreted cautiously.

Sixth, although lifestyle variables such as alcohol use were collected, inconsistent reporting meant this factor could not be reliably included as a covariate. Given alcohol's established links to depression and suicidality [45, 46], its omission is a limitation. Future research should incorporate standardised, high-quality measures of substance use, sleep, physical activity, and psychosocial stressors. Additionally, future research could also usefully explore whether changes in other covariates – if collected thoroughly – such as specific symptom domains (e.g. vasomotor symptoms), mediate the relationship between HRT and mental health outcomes. However, caution is warranted due to potential multicollinearity between overlapping symptom measures within tools like the MENO-D.

Seventh, PHQ-9 item 9 (suicidality) was highly skewed, with the vast majority of participants reporting no suicidal ideation. In practice, this produced a binary distribution that violated the normality assumptions required for ANOVA. To address this, a supplementary binary logistic regression was conducted using the same covariates to provide an assumption-appropriate check on the ANOVA findings. The logistic model confirmed the same pattern of results, indicating that reductions in suicidality were not moderated by HRT type. Although this reanalysis supports the robustness of the findings, future studies with larger samples could model suicidality categorically from the outset.

Lastly, both the PHQ-9 and MENO-D, while validated for symptom screening, were not specifically designed to track treatment response. This limits precision when interpreting change scores over time. Broader use of clinician-rated outcomes or structured diagnostic interviews may strengthen future evaluations.

Conclusions

This study provides preliminary evidence that combined hormone replacement therapy – including regimens such as oestrogen + progesterone and oestrogen + progesterone + testosterone – may be associated with significant improvements in depressive symptoms and menopause-specific psychological distress among menopausal women. Although suicidality declined over time among those at risk, this effect was not moderated by HRT type, suggesting that broader clinical or psychosocial factors may be at play. Supplementary logistic regression confirmed that this pattern was robust, indicating that reductions in suicidality were independent of hormone regimen.

The findings reinforce the importance of assessing suicidality as a distinct outcome during menopause, rather than subsuming it within general depression scores. Standard tools may not fully capture the complexity of mood instability and suicidal ideation during this life stage, highlighting the potential value of menopause-specific instruments like the MENO-D.

While the observational design limits causal conclusions, the large clinical sample and consistency across measures suggest meaningful psychological improvements associated with multi-hormonal treatment. These results support a more individualised approach to menopause care: one that considers hormonal profile, mental health history, and timing of intervention.

Future research should explore the impact of HRT dosage, delivery method, and treatment timing using longitudinal and randomised designs. Direct comparisons of oestrogen-only and oestrogen + testosterone regimens are also warranted, particularly in post-surgical or premature menopause populations, to determine whether testosterone adds incremental benefit beyond oestrogen alone. Further development

and validation of menopause-sensitive screening tools are also needed to ensure that suicidality and mood symptoms are accurately identified and addressed. Integrating mental health screening into routine menopause care could improve early detection, guide targeted treatment, and ultimately reduce psychological burden during this vulnerable life stage.

Practice Implications

- Despite growing awareness of menopause-related distress, most national guidelines still lack specific recommendations for assessing suicidality during this life stage. This represents a missed opportunity for early detection and targeted intervention.
- Menopausal women presenting to healthcare services should be routinely screened for psychological distress and suicidality, not just somatic symptoms.
- HRT regimens that include testosterone may offer enhanced psychological benefit and should be considered in cases with prominent mood symptoms.
- Tools like the MENO-D may detect symptoms missed by standard depression measures and could improve case identification.
- Integrating mental health screening into gynaecological and menopause clinics could reduce suicide risk and improve treatment precision.

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Ethics

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013. All procedures involving patients were approved by Liverpool John Moores University

Research Ethics Committee (LJMU REC ID: 22/PSY/080), and all participants provided informed verbal consent prior to enrolment in the study. The rationale for obtaining verbal consent instead of written consent was to increase accessibility and participant comfort, particularly given the sensitive nature of the study topic.

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Author Contribution

OH, PS, JCM, and AR conceived and designed the study. LN, AK, and DR contributed to study material development and recruitment. AK and DR collected the data. OH, PS, JCM and AR analysed the data. OH led interpretation of study findings. All authors contributed to interpretation of findings. OH led the draft of the work. All authors read, commented on and approved the final version of the paper. OH is the lead author. PS is the senior researcher.

Transparency Declaration

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported. No important aspects of the study have been omitted, and all deviations from the originally planned methodology (where relevant) have been clearly explained in the manuscript.

Declaration of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Data Availability

The authors confirm that the data supporting the findings of the study are available within the article and/or its supplementary materials.

Analytic Code Availability

The analytic code used in this study is based on standard statistical procedures conducted in SPSS and has been retained in full by the authors. While the code is not deposited in a public repository, it is available from the corresponding author upon reasonable request for purposes of result verification or methodological replication.

Research Material Availability

The study used anonymised clinical data collected as part of routine care at a specialist clinic. As such, raw data cannot be publicly shared due to patient confidentiality and ethical restrictions. However, summary materials and full methodological documentation are available from the corresponding author upon reasonable request.

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Chapter 5: The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.

Findings from Chapters 1 and 3 of this thesis have highlighted a critical gap in our understanding of suicidality during the menopausal transition, particularly in how it is experienced by women themselves. Chapter 4 also highlighted the potential benefits of HRT in relation to mental health symptoms, including suicidality, and the high prevalence of suicidality pre-treatment. However, quantitative studies are limited in their nuance and ability to capture the complexity of human experience during the menopausal transition and associated treatments. Indeed, while growing research explores the hormonal and psychological changes associated with menopause, much of it overlooks the lived, cyclical, and often non-diagnostic nature of menopausal distress and suicidality. Existing studies frequently prioritise diagnostic frameworks or treatment efficacy without capturing how distress is embodied, how suicidality manifests outside conventional categories, or how women navigate fragmented support systems.

This qualitative study addresses these limitations by centring the voices of midlife women who have experienced significant psychological distress or suicidality during perimenopause or menopause. It explores how suicidal thoughts emerge and evolve over time, how they intersect with physical symptoms, identity changes, stigma, and health service experiences, and crucially, what women themselves perceive to be helpful or unhelpful in terms of treatment and support. In doing so, the study contributes to a more nuanced and comprehensive understanding of menopausal mental health, highlighting the urgent need for gender- and stage-sensitive models of care that recognise embodied distress, hormonal sensitivity, and the unique psychosocial context of midlife.

Note: This paper has been accepted for publication in Women's Health and is currently pending publication. Therefore, this chapter is formatted in line with the formatting requirements of the journal.

The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.

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Abstract

Background

Menopause, characterised by significant hormonal changes, can greatly impact mental health. While physical symptoms are well-known, the psychological effects, particularly suicidality, are underexplored. Suicide rates among women aged 45-55, the typical menopausal transition age, are notably higher, potentially linked to hormonal fluctuations that affect mood regulation. Despite this, little qualitative research exists on the relationship between menopause and mental health challenges, including suicidality.

Aims

This study explores the mental health challenges, especially suicidality, experienced by women during perimenopause and menopause. It seeks to understand the factors contributing to these experiences and the role of healthcare in addressing them.

Method

Semi-structured interviews were conducted with 42 women, recruited from a private menopause clinic and the general population. Interviews explored participants' mental health experiences during perimenopause and menopause. Data were analysed using reflexive thematic analysis with NVivo 14.

Results

Participants reported varying degrees of suicidality, from abstract thoughts to suicide attempts. Feelings of hopelessness and entrapment were common triggers. Delays in receiving appropriate hormone replacement therapy (HRT) and misdiagnoses, such as being prescribed antidepressants instead of HRT, worsened symptoms. Many clinicians lacked adequate knowledge about menopause, with some responding in a dismissive or invalidating manner. Women reported significant improvements in mental well-being after receiving timely HRT. Peer support and lifestyle changes were also identified as beneficial.

Conclusions

Improved training for healthcare providers, timely HRT access, and holistic care are crucial for addressing perimenopausal mental health challenges. Women's Health Hubs, as outlined by the Women's Health Strategy for England, offer a potential solution for integrated care.

Introduction

Menopause, marked by significant hormonal shifts, is a critical phase in the female lifespan that can profoundly affect mental health (Hogervorst et al., 2022). While physical symptoms such as hot flushes and sleep disturbances are well-documented (Sleep Foundation, 2024), the psychological impact remains underreported. Available statistics from the UK, USA and Australia illustrate that suicide rates amongst women are more frequent around the age (i.e., 45 – 55 years) of the menopausal transition (ABS, 2022; CDC, 2022; ONS, 2022), suggesting that mental health issues are particularly significant during this period. The limited research in this area indicates that menopause is characterised by decreasing or fluctuating oestrogen and progesterone levels, and suicides in women tend to cluster around these hormonal states (Baca-Garcia et al., 2010), potentially via lower hormone activity reducing serotonergic function (Arango et al., 2001). However, issues of suicidality and potential mediating and protective factors have not been adequately examined in existing research.

The current research primarily focuses on the biological and psychosocial aspects of perimenopause – the few years leading up to menopause (NHS, 2022) – as research has suggested that suicide risk can be more pronounced during this period (An et al., 2022; Nakanishi et al., 2023; Usall et al., 2009) (Alblooshi et al., 2023). It is important to consider that the field of perimenopause and suicidality is complex and multifaceted, and is potentially related to hormonal changes, mental health history and social factors. However, there is a severe scarcity of qualitative research exploring this. The significance of understanding the lived experiences of women and those around them can shed light on the factors contributing to suicidality during perimenopause and help identify specific needs that may be overlooked in general mental health care. Furthermore, it is crucial in developing tailored mental health interventions unique to this life stage. Therefore, this study aims to explore the experiences of severe mental health issues particularly suicidality among women who are currently going through or have previously experienced perimenopause or menopause.

Method

Design

Qualitative semi-structured interviews explored women's experiences of perimenopause and menopause, with a particular focus on mental health challenges including suicidality. The interviews were conducted online, ensuring flexibility and accessibility for participants. The interview period spanned from March 2023 to February 2024. We employed a qualitative methodology to capture women's experiences in more depth and detail than previous quantitative work in this area. The COREQ checklist (Tong et al., 2007) for qualitative research was used to ensure we had covered all the appropriate elements necessary for a rigorous study.

Participants

A total of 42 women participated in the interviews. Seventeen of these women were patients of a private menopause clinic, and the remaining 25 were recruited from the general population through an advertisement posted on social media. This sampling method aimed to reduce potential bias and ensured more diverse perspectives. The key themes identified in the study were consistent across both recruitment groups. To be eligible, women had to self-report current or previous experience of perimenopause, and must have faced mental health struggles, particularly those involving suicidality. Each participant received a £10 Love2Shop voucher as compensation for their time.

Materials

An interview schedule was used as an aid in exploring women's experiences. The questions were open-ended and organised around the key themes of: 1) general experiences of perimenopause or menopause; 2) support for managing suicidal thoughts or self-harm in the context of healthcare interactions; 3) comparison of suicidal ideation over time; 4) external support sought for mental health issues; and 5) additional insights or reflections on their experiences.

Procedure

In the private menopause clinic, participants were invited to join the study at the end of their appointments and given the primary researcher's email to express interest. Those

recruited via social media were similarly instructed to contact the researcher. After expressing interest, participants received the participant information sheet via email. Audio-recorded verbal consent was obtained before interviews, with participants informed they could pause or withdraw at any time. To ensure well-being, participants were given the research team's contact details, and psychological support was offered for those at risk. All interviews were conducted one-to-one via Microsoft Teams, lasting 30-45 minutes.

Data analysis strategy

The interviews were transcribed and analysed using Braun and Clarke's updated (2021) reflexive thematic analysis framework. Key phases, included familiarisation with the data, generating codes, constructing themes, reviewing and defining themes, and writing up the results. Reflexivity was integral, with researchers actively reflecting on their own biases, assumptions, and positionality to prevent undue influence of the analysis. A hybrid approach combined a deductive framework to guide initial coding while remaining open to inductive insights that emerged from the data. After identifying and refining the codes, they were grouped into broader themes that encapsulated significant patterns across the dataset. Themes were collaboratively reviewed and agreed upon by the research team to ensure rigour. Data management and analysis were facilitated using NVivo 14 software (Lumivero, 2023).

Ethics and consent statement

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013. All procedures involving patients were approved by Liverpool John Moores University Research Ethics Committee (LJMU REC ID: 22/PSY/080).

Results

Forty-two women volunteered and took part in the study. All had experienced suicidality and most (95%, n = 40) had seen their GP or a specialist for their symptoms. The thematic

analysis process (Braun & Clarke, 2021) applied to the transcripts elicited key concepts evident in the data. These themes are essential in understanding the perimenopausal experience, from pre-diagnosis to post-treatment. The categories have been split into “Symptomology of Perimenopause: Cyclical Patterns, Physical Discomfort and Psychological Distress”, “You’re Just Dying Inside; What’s the Importance of Living?” and “Treatment: What Works and What Doesn’t” (See Supplementary Table 1 for more detailed information of themes).

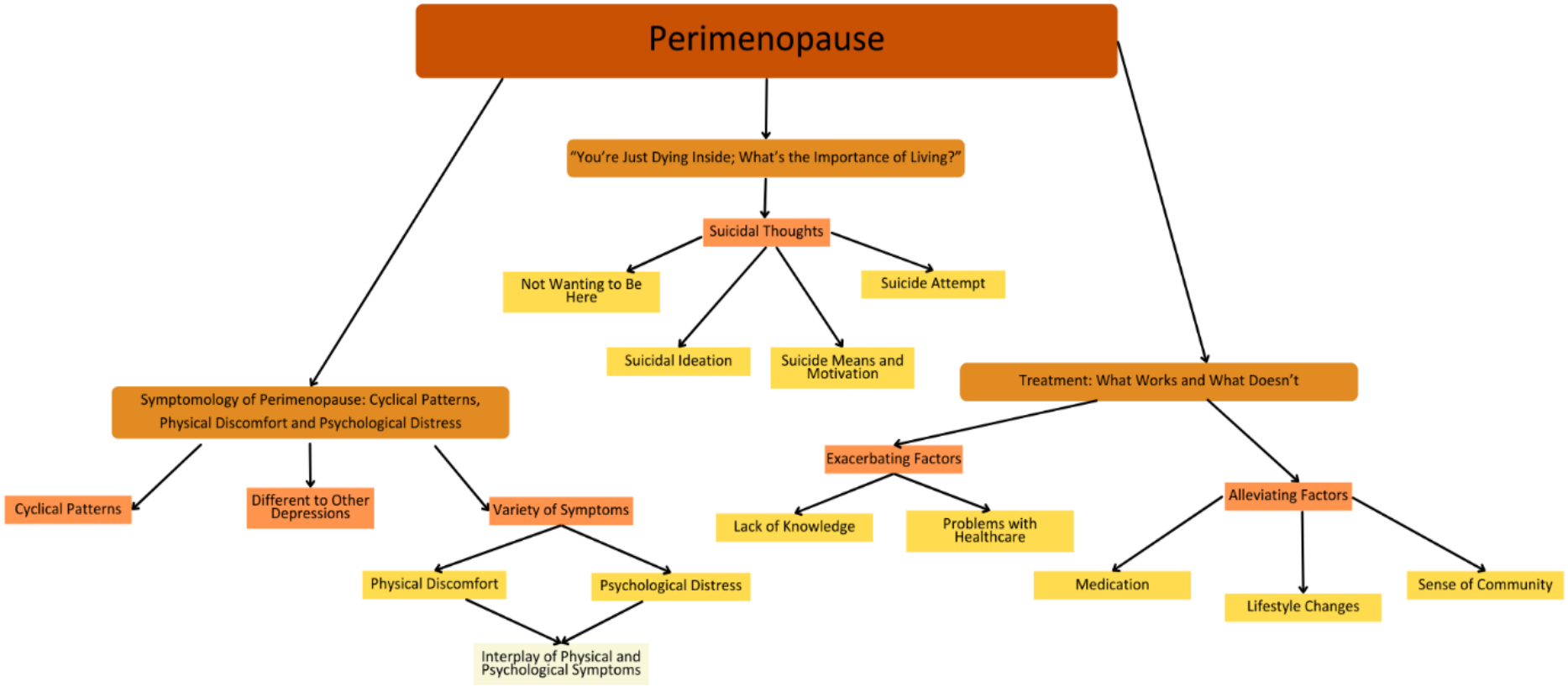

Fig 1. A thematic analysis map describing the themes and subthemes.

Symptomology of perimenopause: cyclical patterns, physical discomfort, and psychological distress

Cyclical patterns

In the interviews, women marked perimenopause by the interplay of physical and psychological symptoms, many of which they claimed to occur cyclically which may be related to hormonal fluctuations in the body. Women frequently reported that these symptoms intensified during the luteal phase of their erratic menstrual cycle, typically what would have been a week before their menstruation began:

"Particularly just before my period... I'd be getting quite intrusive suicidal thoughts" – Participant 9.

The wide and cyclical nature of these symptoms can be both predictable and disruptive, ranging from physical discomfort to severe psychological distress typically aligned with the menstrual cycle.

Physical discomfort

Among the most commonly reported physical symptoms of perimenopause were hot flushes – sudden, intense waves of heat that disrupt daily activities and sleep patterns. These episodes of overheating are often coupled with night sweats, leading to insomnia:

"They're very severe... I would have my bed sheets soaked... it felt like I was going to die from the heat" – Participant 14.

The hot flushes were reported by women to be tied to an increase in anxiety, which further complicated their ability to sleep. Alongside these temperature fluctuations, women reported experiencing musculoskeletal pains and body discomfort, which also prevented a restful sleep and subsequently caused fatigue:

"I've been parachuted... from being fit and healthy and active to being a decrepit, tired, old lady full of aches and pains" – Participant 30.

Psychological distress

The psychological symptoms of perimenopause are often just as debilitating as the physical ones, manifesting in a wide variety of ways. Many women reported a unique form of depression that differed from bouts of depression they had experienced pre-perimenopause. However, some noted similarities between the perimenopausal episode of depression and depression caused at other times of hormonal fluctuation, for instance during the luteal phase of the menstrual cycle when diagnosed with PMDD or postnatally but *"way worse"*. This perimenopausal depression was also characterised by extremely low mood, a sense of fatigue, feelings of uselessness or being a burden to others. It was also characterised by a sense of despair, as some women believed that they had nothing left to offer. They were questioning their value and purpose and felt as though their life was effectively over:

"What's the point in being alive? What purpose, what function do I have? I've got nothing left to give, nothing left to contribute. Why am I still here?" – Participant 30.

Some women were confused by their feelings because they could see nothing wrong in their lives. Yet, despite the absence of obvious stressors, they found themselves overwhelmed by feelings of irrational sadness. One participant recalled feeling out of place in a psychiatric hospital because her life seemed stable and fulfilling, and her issues did not align with the challenges typically discussed in psychological therapy:

"I just didn't have anything to say [in therapy]... I felt ridiculous because everyone I was surrounded by had these huge life problems, and I was just like... I love my husband, I've got three great kids and I'm really enjoying my life. And they said I wasn't being honest. Sometimes I tried to make things up so I had something to say" – Participant 3.

Mainly, what sets this form of depression apart from clinical depression seems to be the awareness women maintain while experiencing it. Despite their emotional struggles, they understand that their mood shift is hormonally driven; a level of rational insight that isn't typically present in traditional depressive episodes. However, with this brings a sense of powerlessness, as women are aware of their emotional descent, but feel unable to stop it:

"I believe the drop in oestrogen had caused issues with my brain. I could feel something wasn't right, but I couldn't stop it... I had enough insight to know that this was not me" – Participant 32.

In addition to depression, many women experienced heightened anxiety, often for the first time in their lives. This included dread, paranoia and intrusive thoughts which could be suicidal in nature. Another cognitive challenge that was reported during the perimenopausal period was problems with memory, such as *"scary"* levels of brain fog and inability to concentrate which have knock-on effects on overall mental well-being.

One participant reported experiencing psychotic experiences during their perimenopause, such as auditory and visual hallucinations:

"I heard footsteps on the stairs and the landing creaking...there were two of me in the bedroom, and I couldn't actually work out which was the real me and which was the hallucination" – Participant 28.

This emotional volatility can lead to irritability and episodes of rage, as women try to navigate their new normal:

"My little four-month-old daughter wouldn't eat [her dinner]... I had this overwhelming sense of irritability and anger, I had to hide in the pantry. I've never felt it ever before" – Participant 1.

Interplay of physical and psychological symptoms

The physical and psychological symptoms experienced during perimenopause can lead to a significant loss of resilience, creating a vulnerable state where women may feel emotionally and mentally depleted:

"I got overwhelmed by the slightest thing, like taking a parcel to the post office. I just couldn't do it. It was too much" – Participant 11.

As the symptoms cycle through alongside major life events also occurring, it can lead to feelings of failure, self-doubt and eventually suicidality.

“You’re Just Dying Inside; What’s the Importance of Living?”

Suicidality was prevalent among all the women interviewed, with each expressing varying degrees:

“There was a period where I gave up… I just wanted it all to end” – Participant 23.

This emotional distress did not always manifest as an active desire to end one's life but often stemmed from inability to see an escape from the constant struggle. Suicidal thoughts and ideations may be triggered by the overwhelming exhaustion due to navigating the intense physical and psychological symptoms, causing feelings of entrapment and hopelessness about the future:

“I’m going to die. I can’t go on like this. I don’t know where to go, I don’t know what to do” – Participant 31.

However, the severity of suicidality during perimenopause varied greatly among women interviewed, ranging from distressing thoughts to life-threatening actions. For some, suicidal ideation was more abstract, with women idealising or fantasising about how they might end their lives as a coping strategy, without a plan to act on the thoughts:

“I could grab one of those [ropes] and hang myself in our house… it wasn’t like I was intentionally exploring that as an option, but it was like my head was presenting these coping options to me” – Participant 5.

In contrast, others experienced more intense and urgent suicidal thoughts, where they not only imagined specific ways to end their lives but also had the means readily available and the motivation to act. Several women made plans to act on their suicidal thoughts but did not follow through either due to a moment of hesitation, fear, or because of loved ones:

“In 2018, I went out with the intention of ending my life. I had a plan, I knew exactly what, where, when, how…I would really have to fight hard not to go out and actually follow through with the plan that was in my head” – Participant 11.

Unfortunately, some women reached a critical point where the burden became unbearable, leading them to follow through with the plan to end their lives:

"I tried to throw myself in front of a train, I tried to drink myself out of here, and I just wanted to die... begged my husband to take me to Dignitas (euthanasia service)" – Participant 7.

For some interviewed, the onset of suicidality during perimenopause was profoundly traumatising, especially for those who had never experienced mental health difficulties before. The intensity of the feelings left them deeply unsettled and frightened that their brain might go there again:

"They've [suicidal thoughts] left a significant impact on me. I think I've got some sort of PTSD from it" – Participant 31.

Treatment: What Works and What Doesn't

The decline in mental health during perimenopause can be catalysed by various factors that intensify emotional and psychological strain. This included i) negative gender stereotypes about women and menopause, ii) lack of knowledge of menopause within the self, the healthcare system and society, iii) resistance from clinicians when treatment is sought out, iv) delays in receiving the correct treatment, and v) a lack of appropriate services. Additionally, many women interviewed felt a sense of shame at their inability to cope, which worsened their mental well-being.

Exacerbating factors increasing challenges for perimenopausal women

Negative female stereotypes during perimenopause sometimes pressure women to ignore their struggles. Society expects women to continue performing their roles as professionals, caregivers, or partners, disregarding the intense physical and emotional changes they experience:

"I feel like as a woman we kind of just get on with stuff. We have to… the whole family unit will just fail, so it's on our shoulders" – Participant 34.

The expectation of women being endlessly resilient causes guilt for struggling. Additionally, the lack of knowledge that women had about their own menopausal transition often contributed to this. Many interviewed were unaware they were experiencing perimenopause at the time and that it affected mental health.

Not only was a lack of knowledge reported by women about their own health, but also a significant gap in knowledge about menopause and hormones among healthcare professionals:

"There was zero knowledge about hormones. They were doing their best with what they felt they knew, but they didn't know anything about this subject whatsoever. It's not on their assessments to ask about women's menstrual cycles" – Participant 2.

A significant challenge many women faced during their experiences with healthcare was the lack of awareness among general practitioners that perimenopause existed. Some women reported that clinicians told them they were too young to be menopausal if they were still having periods, being *"totally shut down"* if they queried it. Some women also found that their symptoms were not taken seriously in general practice, which often resulted in frustration:

"Nobody really listened until I went to the GPs and said I intend to end my life… nobody thought there was an issue" – Participant 11.

Many interviewed encountered resistance from their GPs when seeking help for their symptoms, which added to their distress. Doctors were often sceptical, despite women presenting with a range of signs, and reluctant to explore hormone replacement therapy as a solution.

"I was asking…could it be hormone-related? And they [GP] were saying, 'no, it couldn't'. It probably was about nine months of…being convinced it was hormones and him resisting" – Participant 5.

Some women reported experiencing dismissing and patronising attitudes from GPs, with certain doctors offering inappropriate or overly simplistic solutions to their complex symptoms, such as just *"to go on holiday"*.

"I went to the GP... she said you just have to get over it. She said you can't take a tablet for everything" – Participant 42.

Two participants said their GP attributed their concerns to the "Davina effect" (increased menopause awareness following Davina McCall's documentaries) reducing their worries as media-driven. Others had similar experiences, being told to *"pull yourself together"* or that *"menopause doesn't affect mental health"*. One participant was advised to drink alcohol to manage her symptoms, despite having quit for health reasons, while another was told alcohol, not menopause-related depression would *"kill her"* first. One participant recalls a particularly invalidating experience with her GP:

"I remember we went out into the waiting room... this lady who was about 85, was old and struggling. She [GP] just glared at me and said: 'this is struggling', referring to the old lady" – Participant 7.

Many women expressed frustration over significant delays in receiving treatment from GPs, with some noting that when eventually provided, it often was incorrect. Some had to prescribe and manage their own HRT because of this. One participant recalled her husband, a GP, having to prescribe it, as there was no knowledge of prescribing it amongst psychiatry, trauma orthopaedics or gynaecology:

"In the end, my husband had to prescribe it, pick it up from the chemist, [and] bring it into the hospital for them to load it on their system" – Participant 2.

Often, women were prescribed a wide range of *"mind-altering"* medications including antidepressants, anxiolytics, and antipsychotics before finally being offered HRT:

"They seemed really willing to repeatedly prescribe loads of different forms of drugs, and yet unbelievably resistant to prescribing my own hormones back to me" – Participant 5.

Several women shared that they underwent *"pretty brutal"* electroconvulsive therapy for their symptoms, even after suggesting it may be hormone-related.

Discussions in the interviews highlighted a significant lack of menopause-specific services available, leaving women feeling unsupported and without access to specialised care, with one participant stating that *"the NHS is busy doing other things"* so *"we just have to struggle"*.

There were also discussions about the lack of coordinated care even when support is available, with *"no joined-up thinking"* between psychiatry, endocrinology and general practice, leading to fragmented and ineffective treatment.

These negative experiences have caused many women to *"question the whole healthcare system",* feeling dismissed and unsupported:

"I saw numerous GPs, I spoke to somebody in a gynaecological department... and spoke to two different psychiatrists. And at no time during that journey, did anybody say anything about hormones" – Participant 5.

The negative experiences also made people turn to private healthcare services to receive appropriate treatment for their perimenopausal symptoms, but they acknowledged that this option may not be financially feasible for many, leaving them without the care they need:

"We're lucky that we're in a reasonable financial situation [to go private]. Unless you pay... no-one gives a shit. If I hadn't spent £300 speaking to somebody at [private service], what would have happened? I was literally left in the lurch. Unless you've got money you're struggling. And that's probably why women are topping themselves, isn't it?" – Participant 32

Alleviating factors for managing symptoms

Despite the numerous challenges women can face during perimenopause, many find that there are ways to manage the symptoms and improve their quality of life. Understanding the importance of support, whether through effective medical treatment, emotional support from loved ones and those experiencing something similar, or lifestyle changes can make a positive difference in mental well-being.

One of the main alleviating factors for many women during perimenopause is HRT, which, at the correct dose, can regulate the hormonal imbalances that may cause the range of physical and emotional symptoms:

"I didn't start to feel better until I had my hormones replaced, and it was literally days that all those symptoms improved…I'm on max dose oestrogen, progesterone… and I've started on some testosterone as well. I feel amazing… all my symptoms have gone. You become a totally different person. I can't believe the change. I felt a weight had been lifted" – Participant 28.

For many women, HRT decreased feelings of suicidality specifically:

"Until I went on HRT, I thought if there was a way that you could go without hurting yourself… I would've taken that option" – Participant 24.

Some found that adding testosterone into their treatment plan was particularly beneficial, noting that it helped feeling *"a sense of joy and well-being, and feeling happy and settled"*.

However, while HRT can be a highly effective treatment for alleviating many of the symptoms associated with perimenopause, it is not a cure-all. Many women still experience symptoms even after receiving the correct dose of HRT, but they are generally more manageable compared to before treatment:

"I felt as if I'd been stood on the edge of a cliff and it had enabled me to step a couple of feet backwards" – Participant 29.

Some women found that a combination of HRT and antidepressants was effective for them in managing the psychological symptoms of their perimenopause. However, while HRT has proven effective for many women in reducing psychological perimenopause symptoms, it does not work for everyone, and some continue to experience severe symptoms:

"Even with HRT, I still have to do quite a lot of things to be able to feel well enough to function in the world the way I want to" – Participant 41.

Aside from taking medications, some women found that making lifestyle changes, such as increasing their physical activity, and *"having the oxygen going through you",* had a positive impact on managing the psychological symptoms of perimenopause:

Similarly, dietary changes helped other women stabilise their moods:

What you put in and what you do to your body is ultimately what impacts on what happens to it. It doesn't make you immune to it, but... it definitely helps" – Participant 27.

Another factor that was found to be important for women going through perimenopause was feeling a sense of community which helped mitigate psychological symptoms, as talking to other women experiencing similar things provided emotional validation and reduced feelings of isolation:

"I found my tribe when I went to the menopause clinic because I was there with people who were non-judgmental and incredibly supportive...I think that the HRT may have been just as important as having felt validated and listened to and in a safe space with people who were going through the same thing" – Participant 8.

Additionally, workplace adjustments emerged as another vital factor in supporting women's health during menopausal transition. Women who reported having an empathetic and accommodating work environment described feeling less overwhelmed and more capable of balancing their lives, which in turn contributed to improved mental well-being.

"Our work has given us a women's room...for people that are in menopause. You can sit and chat with somebody, read some literature... it's not a medical setting, but at least the workplace has recognised there's a need for something, and that's brilliant" – Participant 24.

Discussion

Our study highlighted the severe mental health challenges women face during perimenopause, particularly suicidality, exacerbated by inadequate healthcare support

which frequently lacked the knowledge and responsiveness needed to address menopausal symptoms appropriately.

The study found that suicidality was a significant concern among women experiencing perimenopause, with some women reporting mild and abstract thoughts of death, and some attempting to end their lives. This spectrum of intensity is consistent with existing suicide research (Harmer et al., 2024). Some participants reported driving feelings of hopelessness and entrapment, feeling overwhelmed by their symptoms, viewing suicidal ideation as an escape from their persistent suffering. This aligns with the integrated motivational-volitional model of suicidal behaviour (O'Connor, 2011), which posits that perceiving no escape or solution is a precursor to suicidality.

The delays in receiving effective HRT and mental health support contributed to the worsening of symptoms, with most women reporting long waits, multiple appointments and having to *"fight"* before being offered treatment. This is consistent with research that found 7% of menopausal women attended a GP surgery over 10 times before receiving adequate treatment, 30% experienced delays in diagnosis, and 44% waited over a year for treatment (The Fawcett Society, 2022). When appointments were finally obtained, participants reported a lack of education on menopause from healthcare professionals, which ultimately led to the misdiagnosis of symptoms, as well as inappropriate advice such as simply learning to deal with symptoms or to go on holiday. Participants then described being prescribed antidepressants, anxiolytics, antipsychotics, and electroconvulsive therapy, instead of HRT, despite the 2015 guidance from the National Institute for Health Care and Excellence (NICE, 2019) recommending HRT as a first-line treatment option, with discussion of risks and benefits. This is in-line with previous research showing many women are inappropriately offered antidepressants when seeking help for psychological menopause-related symptoms (The Menopause Charity, 2021). Current research also suggests that there is no clear evidence of antidepressants easing psychological symptoms during menopause (NICE, 2019). Our study found that these alternative treatment pathways often led to the worsening of psychological symptoms.

Despite presenting with symptoms clearly linked to perimenopause, women were frequently told they were too young to be going through the menopausal transition, or that their symptoms were unrelated to menopause. As highlighted in previous research (Barber & Charles, 2023), we found that barriers to effective menopause care, including delays in receiving HRT and inappropriate prescriptions of psychiatric medications exacerbate mental health challenges. Unfortunately, this led to feelings of suicidality for some women in our study, as they saw no other way to persevere. However, most women in our study who received timely HRT described significant improvements in their well-being, including the diminishing of suicidal thoughts, aligning with the evidence that HRT can alleviate both the physical and psychological symptoms of menopause when used appropriately (Glynne & Newson, 2023; NHS, 2022).

Additionally, some participants found that exercise, diet changes, and emotional support networks played an essential role in improving mental health and feelings of isolation. This is supported by research exploring the roles of Menopause Cafés – groups for women to openly discuss their experiences with menopause – on mental health. They have been described as the most successful way to facilitate social cohesion and the most effective method of reducing loneliness and stigmatisation experienced by menopausal women (Weiss, 2019), however, there has been no empirical research exploring this.

Many women described finding empowerment in their shared experiences with others, highlighting the positive aspects of menopause and womanhood. One participant reflected: *"When I went into the clinic, there were women there who looked amazing. And then there was others who looked tired like me and a bit fed up and, and it just felt really empowering and special"*. This sense of community allowed women to feel less alone, as they understood that this was a transition unique to the female experience and found solitude in that. Another participant described the bittersweet moment of being in the waiting room of a menopause clinic, reflecting on the *"wonderfulness of being a woman"*, even as she experienced the end of her fertile years. Menopause, despite its challenges, is ultimately part of the journey of womanhood, with some participants highlighting the importance of embracing this stage of life.

Limitations

The study has several limitations. Firstly, the sample drawn from private clinic patients and respondents and online respondents may not represent the broader population, particularly those without access to privatised care or digital platforms. Also, conducting all interviews online may have affected the depth of responses and limited rapport with participants. Additionally, reliance on self-reported data may introduce recall bias. The samples consisted of women who had made an explicit connection between menopause and mental-health difficulties. Women who conceptualise their distress solely as a recurrence of pre-existing depression or as unrelated life stressors may therefore be under-represented. This may bias the narratives toward those who view menopause as central to their experience and should be considered when interpreting the transferability of findings. Non-English speakers were also excluded, potentially omitting diverse perspectives. Future research should address these gaps to improve generalisability, as sociocultural and environmental factors also contribute to disparities and inequities in menopause health (Cortés & Marginean, 2022; MacLellan et al., 2023).

Implications for the future

Changes are needed; a holistic and integrated approach to menopause care is vital, particularly in addressing the significant mental health challenges women face during perimenopause, including suicidality. An American study estimated the combined costs of lost productivity and medical expenses for women with perimenopausal depression at $10,000 per woman annually (DiBonaventura et al., 2012), underscoring the need for timely interventions to improve mental health outcomes and reduce financial burdens on women, families, and the healthcare system.

The call for comprehensive biopsychosocial care aligns with the Women's Health Strategy for England (Department of Health and Social Care, 2024), which recognises the gaps in healthcare for women and aims to improve menopause care through the establishment of Women's Health Hubs. These hubs offer a tangible solution – creating one-stop centres where women can receive a wide range of services, from HRT prescriptions to mental health support, in a setting designed to meet their unique healthcare needs. In addition, community-based support networks, such as Menopause

Café's, should be considered to foster peer support, reduce isolation, and promote emotional well-being. Finally, different health services need to improve data-sharing practices to provide more efficient and appropriate care to women experiencing menopause, who may have sought help or been referred through several services.

In conclusion, the present results suggest the failure to adequately recognise the link between hormone imbalances and mental health alongside inadequate primary and social care during perimenopause has led to mental health difficulties and high suicidality rates. These issues not only impact individual mental health, but also place a strain on health services and negatively impact economic productivity. Improving access to women's health services, social support, and clinician knowledge of the range of treatment options available, will help to alleviate the identified problems. With the highest suicide rates observed in women of perimenopausal age, it is clear that action is urgently needed.

Declarations

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Data availability

The authors confirm that the data supporting the findings of the study are available within the article and/or its supplementary materials.

Author contributions

OH, PS, JCM, and AR conceived and designed the study. LN and CC contributed to study material development and recruitment. OH collected the data. OH, PS, JCM and AR

analysed the data. OH led interpretation of study findings. All authors contributed to interpretation of findings. OH led the draft of the work. All authors read, commented on and approved the final version of the paper. OH is the lead author. PS is the senior researcher.

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Declaration of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Chapter 6: Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.

Findings from earlier chapters, including the systematic review (Chapter 3) and qualitative study with menopausal women (Chapter 5), highlighted the profound emotional distress and suicidality that can accompany the menopausal transition. However, while growing research attention has focused on women's lived experiences, the perspectives of those who care for them (i.e. informal carers and healthcare professionals) remain largely absent from the literature. This is a significant gap, given the vital role these individuals play in both supporting menopausal women and navigating often fragmented care systems. Caregivers are frequently exposed to high levels of distress, with limited resources or training, and may experience emotional exhaustion, fear, and helplessness. This study, therefore, sought to explore the lived experiences of those supporting women experiencing severe mental health symptoms during menopause, with a particular focus on suicidality. The chapter also explores what helps and what doesn't in providing effective support, drawing on rich narrative data to inform future care and intervention strategies.

Note: This paper has been resubmitted to the International Journal of Aging and Human Development following reviewer comments and is currently under consideration. Therefore, this chapter is formatted in accordance with the journal's submission requirements.

Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.

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Abstract

Background

Menopause is a critical transitional phase in a woman's life associated with significant hormonal changes that can trigger severe mental health challenges, including suicidality. While some research has explored the experiences of menopausal women, the impact on those providing care – both healthcare professionals (HCPs) and loved ones—remains underexamined. This study aims to explore the experiences of caregivers supporting menopausal women facing severe mental health crises, highlighting key challenges and systemic shortcomings in healthcare responses.

Methods

A qualitative design using semi-structured interviews was employed to capture the perspectives of 28 caregivers, including 19 menopause healthcare professionals (MHCPs) and 9 loved ones of menopausal women who had experienced suicidality. Interviews were conducted online, recorded, transcribed, and analysed using reflexive thematic analysis.

Findings

Four key themes emerged: (1) Suicidality in menopausal women, where caregivers described unpredictable crises and a lack of proactive intervention; (2) The emotional and psychological toll on caregivers, including distress, fear, and burnout; (3) Barriers in healthcare, where MHCPs and loved ones encountered dismissal, misdiagnosis, and an overreliance on psychiatric medication rather than hormonal treatment; and (4) Unmet support needs, with caregivers calling for integrated care, multidisciplinary collaboration, and targeted training for HCPs.

Conclusion

Findings highlight a critical gap in menopause care, emphasising the need for improved HCP training, multidisciplinary approaches, and dedicated support for caregivers. Addressing these challenges could improve mental health outcomes for menopausal women and reduce caregiver burden.

Keywords: menopause, mental health, suicidality, carers, healthcare professionals

Introduction

Menopause is a significant transitional phase in a woman's life, marked by hormonal changes that can trigger a wide range of physical and psychological symptoms (World Health Organisation [WHO], 2024). While physical symptoms like hot flashes and sleep disturbances are commonly discussed, mental health issues during this time have only recently garnered attention. Research has shown that women in perimenopause and menopause are at increased risk for depression (Ablooshi et al., 2023), with literature and suicide statistics suggesting that suicide rates may rise during this period (Usall et al., 2009; Office for National Statistics [ONS], 2024). However, depression during menopause may present with a unique symptom profile, making it more challenging to recognise and diagnose, and may require a distinct approach to care (Kulkarni et al., 2024).

While much of the existing literature on mental health issues during menopause focuses on the experiences of menopausal women, there is a notable lack of attention to the impact on caregivers who support these women, encompassing family members, friends, and healthcare (HCPs). In general, caregivers often experience poorer psychological well-being and general health when confronted with severe mental health crises in the person receiving care, such as suicidality (Marshall et al., 2023; Rytterström et al., 2020), sometimes feeling guilt, shame, and powerlessness in response (Juel et al., 2020), with 49% reporting feelings of depression and 50% reporting loneliness, while 36% have had thoughts related to self-harm or suicide (Carers UK, 2023). Similarly, general practitioners (GPs) often do not feel comfortable assessing suicide risk (Coppens et al., 2018; Saini et al., 2016), as they believe they lack sufficient knowledge and perceive themselves as poorly skilled in dealing with suicidal patients (Palmieri et al., 2008; Saini et al 2016). However, previous research has not explored the experiences of caregivers supporting women facing severe mental health issues, including suicidality, specifically during menopause. Indeed, caregivers are likely to be excluded from qualitative research in general, as these data collection methods are typically more time-consuming (Runacres & Herron, 2023); however, understanding the lived experience of caregivers is crucial to identifying unmet needs and developing tailored interventions.

Research highlights the value of qualitative methods in uncovering key caregiver challenges (McCabe et al., 2016), however, carer-related research remains fragmented, limiting its translation into policy and practice (Larkin et al., 2018), while many existing interventions fail to account for the nuanced experiences of caregivers, reducing their overall effectiveness (Corry et al., 2015). Expanding qualitative research in this area could enhance the impact of support strategies, therefore, the aim of this study is to explore the experiences of caregivers – both menopause healthcare professionals (MHCPs) and loved ones – who have supported menopausal women navigating severe mental health challenges, including suicidality. Evidence suggests that reducing caregiver stress can lead to significant health benefits, including lower mortality rates among carers who experience less stress in their roles (Schulz & Beach, 1999). This reduction in stress not only enhances caregivers' well-being but also improves their capacity to provide effective care (Carers UK, 2023). In turn, this has been shown to lower mortality rates among the recipients of care, highlighting the interconnected nature of caregiver and patient health outcomes (Kuzuya et al., 2011). Furthermore, the immense value of unpaid care, estimated at £162 billion in England and Wales (The University of Sheffield, 2023), underscores the critical role unpaid carers play in alleviating financial strain on healthcare systems, making it even more essential to support them effectively.

By capturing these lived experiences, this research seeks to generate evidence-based insights that can inform and enhance future menopause care interventions, ensuring that support systems are more effectively designed to address mental health crises and align with the real-life challenges faced by those affected.

Method

Design

A qualitative approach was implemented, using semi-structured interviews to explore the experiences and perspectives of caregivers for women who reported suicidality during menopause. The interviews were conducted online, ensuring flexibility and accessibility, spanning from March 2023 to February 2024. A qualitative methodology

was chosen to provide in-depth insights into caregivers' experiences, capturing nuances often overlooked in quantitative research. The study adhered to the COREQ checklist (Tong et al., 2007).

Participants

Twenty-eight participants were interviewed for the study: including 19 MHCPs from a specialist private menopause clinic (10 GPs, 5 administrative staff, 3 pharmacists and 1 nurse) and nine loved ones of women who had experienced suicidality during menopause (6 husbands and 3 friends), recruited both from the clinic and the public. Recruitment focused on ensuring a diverse representation of professional roles and personal connections to the women, capturing a comprehensive view of the challenges carers face. All participants were actively involved in supporting menopausal women, either through clinical care or personal relationships. To protect participant anonymity, demographic detail such as age, ethnicity, and location were not collected, allowing for candid discussions while maintaining confidentiality.

Materials

An interview schedule was developed with open-ended questions to facilitate discussions on: 1) experiences of supporting women during menopause, particularly with severe mental health challenges; 2) challenges faced in managing suicidality during menopause; 3) interactions with healthcare systems and the adequacy of support available; 4) strategies or interventions used to address mental health crises; and 5) insights on the gaps and improvements needed in menopause care.

Procedure

MHCPs were recruited directly from the specialist private menopause clinic, where they were invited to participate during their workday. Interested participants were provided with the primary researcher's email address to initiate contact. Loved ones of

menopausal women were recruited by MHCPs at the clinic and through targeted social media advertisements, with instructions to contact the lead researcher for more information. Once participants expressed interest, they were emailed a participant information sheet detailing the study's purpose and procedures. Before each interview, audio-recorded verbal consent was obtained, ensuring participants understood they could pause or withdraw at any time. Psychological support resources were provided to participants who expressed distress during the interview.

All interviews were conducted one-on-one via Microsoft Teams, lasting between 30 and 45 minutes. This online format allowed for convenience and ensured a confidential environment for discussing sensitive topics.

Data Analysis Strategy

The interviews were transcribed verbatim and analysed using Braun and Clarke's updated (2021) reflexive thematic analysis framework. The analysis involved the following steps: 1) familiarisation with the data through repeated readings of transcripts; 2) systematic coding to identify key features of the data relevant to the research questions; 3) developing and refining themes that captured significant patterns across the dataset; 4) reviewing themes to ensure they were coherent and supported by the data; and 5) defining and naming themes to accurately represent the findings. NVIVo 14 software (Lumivero, 2023) was used to facilitate data management and analysis. Themes were collaboratively reviewed and agreed upon by the research team to enhance analytical rigour.

Findings

Using thematic analysis, four themes were developed: suicidality in menopausal women, the indirect impact this has on caregivers (loved ones and healthcare professionals), the challenges and frustrations of navigating healthcare, and carers' perspectives on what would help them support more effectively.

Suicidality in Menopausal Women

Suicidality among menopausal women was a significant concern for caregivers, with frequent experiences of self-harm, suicidal thoughts, and suicidal attempts. Often, these struggles only come to light retrospectively, as many women had previously hesitated to share their experiences or lacked the opportunity to do so in healthcare settings or with loved ones. As one participant observed, *"more people have got the language to put to it now" (Carer 4)*, reflecting a changing environment in recognising and articulating these challenges.

A clear distinction was noted between passive suicidal thoughts, such as "Why am I here? What's the point of it all?", and active suicidal ideation involving specific plans to end one's life. Clinicians suggested that those with active plans often refrain from seeking help, as they "just want to go and do it", leaving MHCPs primarily supporting individuals who are not intent on dying but are instead "desperate" for support. Participants also highlighted the cyclical nature of suicidality, with many caregivers noting spikes in distress in the two weeks leading up to a menstrual period, underscoring the need for proactive planning and target support during this critical time.

The impulsive nature of suicidality was another significant concern, with women sometimes acting without warning. Tragically, suicide attempts were not uncommon; five caregivers interviewed reported such incidents among the women they supported, often on multiple occasions, seven of which resulted in a loss of life.

The *Impact on Loved Ones of Menopausal Women*

Caring for menopausal women experiencing suicidality places an emotional, psychological, and practical burden on caregivers, fundamentally shaping their daily lives and well-being.

"It's not something that happens to you, and yet it is something that happens to you because you live with it every day" (Carer 3). This statement expresses the impact of living

alongside someone else's struggles. Although the caregiver is not the direct recipient of the distress, they are affected by the constant exposure to it.

Participants consistently described their experiences as "distressing", "exhausting", "scary" and "upsetting", describing feelings of powerlessness, regret, and self-blame, questioning whether they are doing enough to help. Many live with constant fear, worrying about their loved one's safety and feeling *"scared of not being able to find the solution" (Carer 7),* or *"not knowing what to do" (Carer 1)*. For some, the experience is triggering, particularly for those with a history of mental health issues or abuse. The unpredictable "outbursts" of their loved ones create an atmosphere of instability for them, as they often endure being shouted at or hearing graphic, upsetting statements about suicide. This leads to constant vigilance, as they spend significant time thinking about what they can do to avoid conflict, often at the expense of their own mental health.

Balancing caregiving with other responsibilities, such as full-time work and childcare, sometimes with limited support from other family members adds another layer of difficulty. Many of the caregivers felt "stretched thin" trying to navigate their roles in isolation, frequently having to take time off work themselves, further disrupting their financial and professional lives.

The pressure of caregiving often takes a cumulative toll, as the constant exposure to distressing situations and the absence of a clear solution leave caregivers emotionally drained. Many struggled with feelings of inadequacy, haunted by thoughts of what they might have done better or differently.

Impact on Menopause Healthcare Professionals

MHCPs supporting menopausal women experiencing suicidality faced similar challenges, often describing their experiences as "vulnerable", "anxious", and "draining". They struggled to maintain professional boundaries, as they frequently took the intensity of their work home with them, creating a persistent emotional weight. The confidentiality of their role further isolated them, preventing them from sharing the burden with others.

The complexity of cases, coupled with the wide geographic range of patients, made it difficult for MHCPs to connect patients with appropriate local services. Many clinicians admitted feeling "out of their depth", "hopeless" and unsure whether their interventions were enough. These unresolved feelings created lasting emotional scars, with some participants recalling particularly "dreadful" cases that they will never forget.

MHCPs also highlighted workplace challenges that exacerbated their emotional strain, such as working extra hours to manage the needs of their particularly vulnerable patients and dealing with crises even though the clinic is not an emergency service. Remote working added another layer of distress to MHCPs, as they found it challenging to effectively deal with mental health crises over a phone or video call. Additionally, administrative staff – the first point of contact for patients – often encounter individuals at their most distressed or emotional without the clinical training to manage them effectively. Clinicians expressed concern for their administrative colleagues, recognising the emotional toll this took on them. *"The hardest part is… when do you feel that you can hang up the phone?" (Carer 26).* This sentiment underscores the emotional labour and moral dilemma faced by those supporting suicidal menopausal women. It reflects the constant tension between wanting to provide as much support as possible, with the practical limitations of time, energy, and emotional resilience.

Navigating Healthcare: Challenges and Frustrations

Carers and MHCPs faced significant challenges navigating a healthcare system that often fails to address the connection between menopause and mental health. A recurring issue was the lack of knowledge amongst NHS clinicians, with hormones rarely considered in mental health diagnoses during menopause. Carers were frequently told symptoms of menopause such as lack of periods or heavy bleeding, and suicidality were simply "down to the depression" while hormonal causes were dismissed. Blood tests, which can be unreliable during menopause, were used to rule it out, and perimenopause was not mentioned. This lack of understanding left many carers feeling invalidated and dismissed, as their concerns were often ignored or rejected. They described a "hostile" and "painful" experience, with doctors frequently "talking down" to carers and refusing

to explore hormonal treatments, opting instead for psychiatric medications such as antidepressants, anxiolytics, and antipsychotics. One participant recalled their loved ones' experience: *"They just sedated her, and sedated her, more, and more, and more" (Carer 6)*, highlighting the overreliance on medication as a one-size-fits-all solution.

Many carers felt like they were in a "running battle" to secure appropriate treatment, with doctors not connecting mental and physical health concerns during menopause. As one career explained, *"There was not a single conversation between what was happening medically and mentally" (Carer 2)*. Specifically, participants highlighted the lack of communication between the departments of gynaecology, psychology, and endocrinology, leaving many of them to slip through the cracks. This struggle was compounded by the lack of time during appointments to fully discuss the situation's complexities, with carers describing being repeatedly "fobbed off".

For menopausal women experiencing suicidality, the lack of appropriate care pathways was particularly stark. Participants described feeling trapped in "no man's land", where their loved ones were not considered severe enough for crisis intervention but were still experiencing suicidal thoughts. One MHCP explained, *"Frankly, you need to attempt to harm yourself to get admitted"* (*Carer 28)*.

Access to hormone replacement therapy (HRT) was another significant frustration. Many carers reported that HRT was only considered after multiple psychiatric medications and treatments like electroconvulsive therapy (ECT) had failed. For some, the shortage of HRT added another layer of difficulty. Some MHCPs noted that GPs often refused to take over management of HRT because of personal opposition or lack of knowledge. One MHCP shared that patients often kept their HRT prescription a secret from their GP, in fear that it would damage the relationship.

The systemic challenges exacerbated the emotional strain on carers and MHCPs as they felt unsupported and powerless, and clinicians described feeling out of their depth and ill-equipped to address the hormonal aspects of suicidality. Many reflected that they had not been trained on the connection between menopause and mental health during their own training; they had barely been trained on menopause until they took a personal

interest in it. As one clinician questioned, *"It's something that affects every single woman in the world, so why are we not teaching it?"* (*Carer 20).*

Ultimately, all caregivers agreed that "the system is really struggling". The lack of integration, inadequate training, dismissive attitudes, and shortage of resources all contributed to a healthcare environment that is not supportive of suicidal menopausal women.

Carers' Perspectives on Effective Support Strategies

Carers of individuals experiencing suicidality during menopause expressed a strong need for tools and resources to navigate their challenging support roles better; a key theme being the desire for practical guidance on initiating conversations about menopause and mental health in the family home, specifically with their children. Many carers felt overwhelmed and unsure of "where to start" with this issue when it came to discussing it within the family. Additionally, practical support, such as temporary childcare for those without parental support was seen as critical to alleviating their burden. Carers highlighted the value of establishing support networks, such as a dedicated community for spouses and family members to share tips, experiences, and coping strategies. Many stressed that *"more work needs to be done between psychiatrists, psychologists, and menopause specialists" (Carer 11),* to bridge the gap in communication between carers and healthcare professionals (HCPs). Suggestions included integrating psychologists or psychiatrists into menopause clinics or creating specific services to address the mental health challenges tied to hormonal changes.

Financial barriers to accessing care were another concern, with MHCPs proposing initiatives like "pay it forward" schemes or hardship funds to ensure equitable access to private menopause care. Finally, there was a unanimous call for comprehensive training for HCPs on the intersection of mental health and hormonal health, emphasising the need for systemic improvements in understanding and addressing the unique challenges of menopause for both women and their carers. As one carer expressed, "The menopause, it will happen to 50% of the country, and then the rest of the country have to

deal with it" (*Carer 16)*, highlighting the need for the advancement of menopause care, for everyone.

Discussion

Our study explored the impact of suicidality during menopause on caregivers including partners, friends, professional care providers and, administrative staff working in a specialist menopause clinic, highlighting the emotional, psychological, and practical tolls they endure whilst providing support. Caregivers frequently reported feelings of distress, exhaustion, fear, and guilt, which are experiences that are well-documented in studies on caregiving in the context of mental health difficulties. Caregivers supporting the mental health of those in other groups such as cancer (Shaffer et al., 2017) and dementia patients (O'Dwyer et al., 2016) describe similar emotional exertions, with caregiver burden being described as "widespread and unnecessary suffering, isolation, fear, error, and at time bankruptcy" (Lynn, 2014, p. 1021). This intense stress can hinder the care of suicidal individuals and poses significant risks to caregivers themselves, with previous literature highlighting the potential for burnout, resentment, and suicidality (Nosek, 2008; Sun & Long, 2008; Wolk-Wasserman, 1986). Additionally, the literature suggests that caregivers of individuals with complex mental health needs who engage in self-harming or suicidal behaviours often struggle with inadequate support structures and the severe consequences of safeguarding failures, inappropriate discharge procedures, and the absence of clear guidance on managing future incidents at home (Saini et al., 2022). The caregivers in the present study similarly described living in constant uncertainty, feeling unequipped to handle mental health crises due to a lack of appropriate skills and support. Many also expressed a sense of frustration and disappointment with healthcare services, feeling that they had been inadequately prepared and left to navigate these challenges on their own.

Caregivers also frequently reported significant strain in balancing caring responsibilities with other life aspects, such as full-time work and childcare, reporting job loss or a reduction in working hours leading to financial burden and economic insecurity, which is consistently cited as a significant source of stress in other caregiving populations (Van

Houtven, 2015). However, further research is needed to explore the unique financial challenges faced in menopause-specific contexts, as common treatments such as HRT are increasingly in demand and often affected by supply shortages, with appointment wait times almost double NHS England's 18-week target for treatment (Heath & Chaplain, 2023), forcing more individuals to pay for private care and subsequently widening health inequalities (Riach & Jack, 2023).

Previous research highlights that stigma surrounding suicide within the family home can impact families just as deeply as the effects of the suicidality experienced by the recipients of care (McGill, Hackey, & Skehan, 2019), as stigma can create an atmosphere of silence, shame, and fear, making it difficult for families to discuss the challenges they face (McLaughlin et al., 2014). This aligned with our participants' experiences, as they expressed a desire for guidance on addressing these issues with children and other family members to reduce stigma and create a more supportive home environment. Services should consider targeting this stigma directly, providing caregivers with the tools and training to facilitate open discussions about suicide within the family.

Similar findings have been reported on HCPs working in crisis or trauma settings (Harrell, Selvaraj, & Edgar, 2020; Saini et al., 2016), regarding suicide and the risks of compassion fatigue or burnout as MHCPs often struggled to maintain professional boundaries, with many describing feelings of helplessness and emotional scars from distressing cases. The unique challenges of working with menopausal women experiencing suicidality – coupled with systemic barriers such as the lack of knowledge and training in healthcare on the hormonal aspects of mental health (Barber & Charles, 2023) and suicidality (Saini et al., 2017) – contribute to this strain. All HCPs should understand the mental health aspect of menopause (Currie et al., 2021), including the heightened risk of suicidality at this time, particularly those in primary care. HCPs working outside of primary care or mental health often lack the awareness and skills to recognise or effectively manage suicidal states (Cole-King & Lepping, 2010), nor should they be expected to manage such crises as part of their role. However, these professionals – specifically MHCPs – are increasingly finding themselves in positions where they must mitigate suicide risk and manage mental health crises due to a lack of understanding of the hormonal aspects of

mental health in primary care. This issue is exacerbated by the broader gap in suicide prevention training for clinicians, as menopause specialists face a unique "double burden"—not only do they need to be experts in menopause management, but they must also navigate suicidality as a potential risk during this transition. This highlights the urgent need for bespoke, menopause-specific suicide prevention training, ensuring that MHCPs and GPs are equipped with both hormonal expertise and the necessary skills to identify and intervene in suicidal crises. By implementing tailored training initiatives, primary care and crisis care professionals can better support menopausal women at risk, reducing the pressure on MHCPs and ensuring that women receive appropriate, specialised care.

Caregivers in this study frequently described the healthcare system as dismissive and invalidating, leading them to navigate complex medical and mental health needs with little guidance or support which led to feelings of frustration, exhaustion, and helplessness (Carers UK 2023; Liu et al., 2020; Schulz & Sherwood, 2009). A recurring theme was the need for integrated care that bridges the gap between menopause and mental health services, as the current siloed approach leaves carers struggling to provide or access appropriate or effective support. The benefits of multidisciplinary care for patients and carers (Epstein, 2014) has been highlighted previously, as it can lead to quick diagnosis, intervention, and referral (Najm et al., 2020) and improves patient outcomes, including suicidality (Wittink et al., 2020). In the context of menopause-related mental health challenges, our participants suggested a multidisciplinary approach involving collaboration between primary care, gynaecologists, endocrinologists, and psychologists, as this would ensure that both the hormonal and psychological aspects of care are addressed comprehensively, reducing the burden on carers (Poleshuck & Woods, 2014). MHCPs suggested incorporating psychologists directly into menopause clinics, providing immediate access to mental health expertise within the relevant care setting.

A lack of other services, such as support groups for carers, emerged as an issue amongst our participants, as they frequently described feeling isolated and overwhelmed by their caregiving responsibilities. Studies on support groups for caregivers of individuals with dementia (Greenwood et al., 2013) and chronic illnesses (Corry et al., 2015) show that

such groups can reduce feelings of isolation, provide emotional relief, and equip carers with practical strategies for managing their roles. In the UK, the introduction of the Menopause Café initiative in 2017 provides support for women experiencing menopause, but also their partners, family members and friends, as highlighted on their official website (Menopause Café, n.d.). By welcoming carers into these conversations, the Menopause Café aims to strengthen their abilities to navigate their roles and feelings of isolation, however, to our knowledge no empirical research has been conducted on this.

In addition to addressing the support needs of unpaid carers, our findings underscore the importance of providing clinical supervision for MHCPs, as many in our study described feeling overwhelmed by the complexity of their work, particularly when supporting patients experiencing suicidality. Clinical supervision in mental health work settings is widely practiced, and promotes improved staff well-being, a reduction of burnout and enhanced job satisfaction (Bradley & Becker, 2022) and is specifically important in environments that manage patients at high-risk of suicide (Hoffman et al., 2013). However, in non-mental health work settings, it is less commonly implemented (Koivu, 2013). Given the increased prevalence of suicidality during menopause (see Martin-Key et al., 2024 for review), ensuring training for staff at all levels and adequate clinical supervision is crucial as it can provide a structured environment for MHCPs to reflect on their experiences, receive guidance on managing high-risk situations, and develop skills to better support their patients. Additionally, it can mitigate the emotional toll of working with vulnerable populations, preventing burnout, and improving the quality of care delivered.

Limitations

This study has some limitations. Firstly, the sample size of the different groups, may not fully represent the diverse experiences of carers and MHCPs across different healthcare settings, particularly within the public health sector. The inclusion of participants primarily from a private menopause clinic may limit the generalisability of findings to public healthcare context, where resource constraints and patient demographics may differ. However, we did successfully use social media advertising to diversify our sample

of loved ones. Future research should address these gaps to improve generalisability, as sociocultural and environmental factors also contribute to disparities and inequities in menopause health (Cortés & Marginean, 2022; MacLellan et al., 2023). Expanding research to include diverse healthcare systems, cultural contexts, and underrepresented populations would provide a more comprehensive understanding of the challenges faced by carers in supporting menopausal women with mental health symptoms.

Implications for practice

Findings highlight critical areas for improvement in healthcare contexts and support systems to address the challenges faced by carers of menopausal women experiencing mental health challenges, including suicidality. One key recommendation is the development of integrated care models that bridge the current gaps between menopause and mental health services to ensure comprehensive management of both hormonal and psychological symptoms of menopause (Poleshuck & Woods, 2014; Epstein, 2014). Alternatively, the addition of mental health professionals in menopause clinics would provide immediate and more holistic care.

Education and training for HCPs on the mental health risks associated with menopause will be important to avoid misdiagnosis and inappropriate treatment (Currie et al., 2021), subsequently lessening the burden on carers. Comprehensive training programmes should be implemented, focusing on the hormonal underpinnings of mental health conditions during menopause and equipping professionals to recognise and manage suicidality in this population (Cole-King & Lepping, 2010). Additionally, all HCPs should receive comprehensive training in suicide prevention and be informed about the specific link between hormonal fluctuations and suicidality specifically during menopause. Enhancing their knowledge in this area would not only improve early identification and intervention but also increase their confidence in managing these high-risk patients effectively, ensuring that women receive appropriate and timely support (Harrell, Selvaraj, & Edgar, 2020; Saini et al., 2016).

Enhanced support for carers is another essential recommendation derived from the current study. There is a need for resources to navigate their roles effectively, including practical guidance on addressing suicidality within the family (McGill et al., 2019) and balancing caregiving with other responsibilities. Establishing peer support groups can assist with this, as well as reducing isolation and providing emotional relief (Greenwood et al., 2013; Corry et al., 2015), while respite care services, such as temporary childcare, can offer practical help to overstretched carers. Initiatives like the Menopause Café should be expanded to include dedicated support for carers and evaluated for their effectiveness (Menopause Café, n.d.). Additionally, financial barriers to accessing care should also be addressed through initiatives like hardship funds or subsidised private care to ensure equitable access to treatment (Riach & Jack, 2023).

MHCPs require workplace support to manage the emotional and professional toll of caring for suicidal menopausal women, so clinical supervision should be routinely provided to mitigate compassion fatigue and burnout (Bradley & Becker, 2022; Hoffman et al., 2013), and Additionally, administrative staff, who are often the first point of contact for patients, need basic training in handling distressing calls and navigating crisis situations – such as the Handling Difficult Situations with Compassion NHS initiative (NHS England, 2022) – supported by clear escalation protocols to enhance staff well-being and the overall effectiveness of healthcare teams.

In conclusion, to reduce caregiver burden of those supporting menopausal women experiencing mental health challenges, the issues identified in this study must be addressed. This includes integrated care models, enhanced training, additional carer support, and workplace interventions for MHCPs to ensure better health outcomes for everyone involved in the menopausal transition.

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Chapter 7: Discussion

Across this thesis, a consistent and concerning gap has emerged in our understanding of suicidality during the menopausal transition: one that spans clinical, experiential, and systemic dimensions. While suicidality is increasingly acknowledged as a public health issue, it remains largely under-recognised in the context of menopause, both in research and in clinical care. Previous chapters have shown that standard theories, diagnostic frameworks, and treatment models often fail to capture the complexity and cyclicality of menopausal mental health, especially when it comes to suicidal distress. Through a mixed-methods approach, this thesis has addressed these limitations by integrating clinical data with the lived experiences of both midlife women and those who support them. Together, the findings offer a more nuanced and multi-layered picture of how suicidality manifests during menopause, shaped not only by hormonal sensitivity and psychological distress, but also by stigma, structural neglect, and the fragmentation of mental and reproductive healthcare. Importantly, the findings point to specific areas that need to be addressed and what women and their carers need during the menopausal transition to minimise the risk of suicide. The thesis also demonstrates the potential benefits of hormonal therapies and identifies which combinations of hormonal treatments may be most effective for addressing different mental health symptoms. This final chapter brings these strands together to discuss the implications of the thesis as a whole, and to outline the clinical, policy, and research directions needed to reduce risk and improve support for this vulnerable population.

Revisiting the Aims

The overall aim of this thesis was to examine the relationship between suicidality and the menopausal transition from multiple perspectives. A multi-paper, mixed-methods design was used to explore this issue across four studies, using both primary and secondary data. The study aims for each chapter are summarised below, alongside a description of their contribution to the broader evidence base. The integrated contributions are discussed throughout this chapter and visually summarised in Box 3.

1. **Chapter 3 – Suicidality and the Menopausal Transition: A Systematic Review**

This systematic review aimed to identify and synthesise existing research on the relationship between suicidality and the menopausal transition by addressing the prevalence and nature of suicidal ideation, self-harm, and suicide attempts in perimenopausal and menopausal women, and explored biopsychosocial and cultural factors that influence suicide risk during this life stage. A total of 19 studies were included and assessed for quality using the Mixed Methods Appraisal Tool (MMAT), and then narrative synthesis was used to examine key findings and gaps in the literature.

In doing so, this review contributes critically to the broader evidence base by exposing the conceptual and methodological marginalisation of suicidality in menopause research, identifying inconsistencies in diagnostic categorisation, and underscoring the lack of culturally sensitive and hormonally informed assessment tools. The findings have important implications for policy and clinical practice, particularly the need for integrated care models that incorporate mental health screening into menopause services, and for targeted suicide prevention strategies that recognise the menopausal transition as a period of elevated psychological vulnerability. The review also highlights key priorities for future research, including the need for longitudinal designs, intersectional frameworks, and studies that examine the impact of hormonal treatments on suicidality as a primary outcome.

2. Chapter 4 – Improving Detection and Treatment of Psychological Distress During Menopause: Evidence from a Clinical HRT Cohort

Using anonymised clinical data, this study aimed to examine the impact of hormone replacement therapy (HRT) patterns on mental health outcomes in menopausal women, with a particular focus on depressive symptoms and suicidal ideation. Mixed ANOVAs, a logistic regression, correlations, and t-tests were used to compare mental health scores across different treatment types and timepoints, with the findings highlighting both potential benefits and limitations of HRT in improving mood and reducing suicidality, adding an important clinical dimension to the thesis. The quantitative and longitudinal nature of this chapter enabled the thesis to examine objective and precise indicators of mental health changes over time, thus allowing more general and causal conclusions to be made.

In doing so, this study makes a novel and important contribution to the broader evidence base by being the first to longitudinally examine suicidality as a distinct outcome in the context of menopause care, and to compare the effects of multiple, different hormone therapy regimens on suicidal ideation over time. By using routinely collected clinical data from a large specialist menopause cohort, the study offers rare insight into both the high prevalence of suicidality at clinical entry and its significant reduction following hormonal treatment; particularly with combined oestrogen, progesterone, and testosterone regimens. These findings provide early empirical support for the potential mood-stabilising effects of tailored hormone therapy and underscore the importance of treating suicidality as a primary clinical concern in menopause services. The study also highlights key priorities for clinical innovation and future research, including the integration of mental health screening into hormone therapy pathways, the need for stratified care models for women presenting with suicidality, and further investigation into the specific biological and psychosocial mechanisms through which hormonal interventions may reduce suicide risk.

3. **Chapter 5 – The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study**

This qualitative study expanded on the previous chapters by exploring the lived experiences of suicidality among women experiencing or who had experienced the menopausal transition using semi-structured interviews and reflexive thematic analysis. The study aimed to understand how physical, emotional, and social symptoms during menopause contribute to suicidal thoughts or behaviours, and identified key themes relating to symptom cyclicity, identity loss, social isolation, and coping mechanisms.

This qualitative study makes a significant contribution to the growing body of evidence on menopausal mental health by foregrounding women's lived experiences of suicidality during perimenopause: an area that has remained under-researched despite growing recognition of elevated suicide risk in midlife women. Unlike prior studies that primarily focus on biomedical or epidemiological patterns, this research offers a rich phenomenological perspective on the psychosocial, hormonal, and systemic drivers of suicidality. It identifies systemic healthcare failings, such as misdiagnosis, delayed treatment, and lack of HRT access, as critical exacerbators of mental distress and suicidal ideation. By amplifying women's voices and documenting the therapeutic value of timely HRT, lifestyle interventions, and peer support, the study highlights the need for integrated, woman-centred care models. These insights inform both clinical guidelines and policy development, reinforcing the urgency of suicide prevention strategies that recognise perimenopause as a period of unique psychological vulnerability.

4. **Chapter 6 – Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives**

This chapter explored the perspectives of carers supporting women who were suicidal during the menopausal transition. The aim was to understand the emotional, practical, and relational impact on carers, as well as their perceptions of gaps in healthcare systems. Interviews were analysed thematically, revealing themes of invisibility,

helplessness, and systemic neglect. This study provided a unique relational and caregiving lens on suicidality during menopause, offering insight into secondary distress and support structures.

This qualitative study adds a critical and underexplored dimension to the literature on menopause and mental health by examining the perspectives of caregivers, including healthcare professionals and loved ones who support women experiencing suicidality during the menopausal transition. It is the first known study to foreground the emotional and systemic burden faced by carers in this context, revealing how poor service integration, diagnostic dismissal, and limited training contribute to crisis escalation and burnout. The findings highlight that suicidality during menopause affects not only the individual but also radiates distress across personal and professional support systems. While this study did not quantify these impacts, the findings point to potential societal and NHS costs when caregivers are unsupported, ranging from increased service demand to lost workforce productivity due to carer stress, burnout, or absence. Future research could expand on these insights through economic modelling of both direct healthcare costs and broader societal impacts.

By capturing these experiences through in-depth thematic analysis, the study underscores the need for integrated, trauma-informed, and hormonally literate models of care that consider both the needs of menopausal women and those who support them. It offers actionable insights for service design, including the implementation of suicide prevention training, carer support resources, and clinical supervision within menopause services, thereby extending the focus of menopause care beyond individual symptomatology to its relational and systemic impact.

Box 3. Contributions and Implications of each Chapter.

Chapter 3: Suicidality and the Menopausal Transition: A Systematic Review

What does this study add? This systematic review is the first to comprehensively examine the association between suicidality and the menopausal transition, as it identifies the range of biological, psychological, and social factors influencing suicidal ideation, attempts, and behaviours in perimenopausal and menopausal women. The review highlights a lack of longitudinal studies, limited attention to perimenopause specifically, and inconsistent reporting of menopausal staging across existing studies.

Implications: Findings point to a need for improved recognition of suicide risk in midlife women, particularly during perimenopause. The review suggests how this might be achieved: the integration of suicide screening into menopause care. Identification of critical gaps in research and clinical practice, including the lack of consistent menopausal staging, limited focus on suicidality as a primary outcome, inadequate inclusion of cultural and ethnic perspectives, and insufficient attention to early menopause and comorbid physical health conditions, provides rationale for further qualitative and quantitative inquiry.

Future Research: Future work should aim to clearly distinguish menopausal stages (i.e. using a multi-method staging approach triangulating self-reported cycle changes, symptom profiles using validated tools, and hormonal testing where feasible), examine hormonal and psychosocial mechanisms underpinning suicidality during menopause, and explore underrepresented populations. Longitudinal and intervention studies are also needed to determine causality and clinical pathways. These gaps informed the rationale for the primary research studies in Chapters 4, 5, and 6.

Chapter 4: Mental Health Outcomes and HRT Use Among Menopausal Women: A Quantitative Analysis

What does this study add? This quantitative study analysed the effects of different HRT treatments on mental health outcomes, including depression and suicidal ideation, in a clinical sample of menopausal women. It found evidence of symptom improvement in some HRT groups, but also variability depending on treatment type and timing. This study builds on the clinical and experiential gaps identified in Chapters 3-5.

Implications: Findings highlight the potential role of HRT in managing mood-related symptoms during menopause insofar as all treatments were shown to significantly improve depression and reduce suicidal ideation with large effect sizes; however, progesterone-only treatments were not effective for depression. Suicide prevention strategies in midlife should consider both biological and psychological pathways and ensure treatment is always personalised.

Future Research: Larger, controlled trials are needed to evaluate the effects of different HRT regimens on suicidality. Further investigation is also needed into interactions between HRT, symptom severity, pre-existing mental health diagnoses, and suicidal thoughts.

Chapter 5: The Mental Health Challenges, Especially Suicidality, Experienced by Women During Perimenopause and Menopause: A Qualitative Study.

What does this study add? This qualitative study offers an in-depth account of how suicidality is experienced during the menopausal transition and highlights the cyclical nature of symptoms, identity disruption, emotional overwhelm, and systemic invalidation. These findings add emotional and experiential depth to the clinical and statistical trends observed in Chapters 3 and 4.

Implications: The findings underscore the need for healthcare services to validate and recognise psychological distress in menopausal women, realising that symptoms may present erratically due to hormone activity. Mental health interventions during this life stage should acknowledge the existential and identity-related dimensions of suicidality, not just symptom reduction.

Future Research: Future studies should explore how support systems can buffer against suicidal distress during menopause, and how different cultural, social, and medical narratives shape the way women make sense of suicidal thoughts. These themes helped shape the carer-focused exploration in Chapter 6.

Chapter 6: Menopause, Mental Health, and Suicidality: A Qualitative Exploration of Caregiver and Healthcare Professional Perspectives.

What does this study add? This study explores the experiences of carers supporting women in suicidal crisis during menopause; a perspective previously absent from the literature. It reveals themes of helplessness, invisibility, relational strain, and frustration with healthcare responses.

Implications: Carers play a critical role in suicide prevention during menopause, yet are often unsupported. Findings suggest a need for clearer guidance, resources, and inclusion of carers within menopause and mental health care plans. The emotional toll of caring also highlights risks to carer well-being, with potential economic costs through increased service use and lost productivity.

Future Research: Further research should explore carer experiences across diverse populations and care settings. Intervention studies may examine how to better involve and support carers, including peer networks and service co-design.

Key Findings and Interpretations

The four studies presented in this thesis make a unique and significant contribution to the growing evidence base on suicidality during the menopausal transition. Together, they provide a multi-layered understanding of the psychological, social, biological, and systemic factors that can contribute to increased suicide risk in this life stage.

The thesis adds to existing knowledge by highlighting the perimenopausal period as a particularly high-risk phase, where hormonal fluctuation, identity disruption, and lack of targeted support combine to create distress that may escalate to suicidality for women. The systematic review revealed both the lack and limitations of existing research, including inconsistencies in how menopause is defined and staged across studies, and a lack of attention to self-harm and suicidal ideation as distinct yet overlapping constructs. Through qualitative exploration, the thesis also gives voice to women's lived experiences, identifying themes of emotional turmoil, disconnection, and internalised hopelessness. These findings are further contextualised by the perspectives of carers, who described their own emotional strain and the invisibility of menopausal suicidality within current healthcare systems; narratives that collectively revealed a system that often fails to recognise or respond to the complexity of suicidality in midlife women. Finally, the quantitative study contributes important clinical insight into how HRT use interacts with mental health outcomes, showing that combination therapies are highly effective in reducing depressive symptoms and that all HRTs reduced suicidality among people with suicidality pre-treatment. Together, the findings call for integrated menopause-specific mental health support, highlighting critical points for intervention and further research across both community and clinical settings.

Menopause, Specifically Perimenopause, as a Period of Elevated Suicidality

Despite increasing recognition of the psychological challenges associated with the menopausal transition, suicidality during this period remains under-researched and under-acknowledged in both academic literature and clinical settings. The findings of this thesis support a growing body of evidence positioning the menopausal transition as a period of heightened vulnerability to suicidality, as, across the studies conducted,

suicidality was not only common but often emerged independently of broader depressive symptomatology. In the quantitative data, PHQ-9 (Kroenke et al., 2001) item 9 (suicidal ideation) demonstrated a distinct pattern of change, not fully captured by total depression scores, while qualitative participants described cyclical, often intrusive suicidal thoughts that appeared to intensify during hormonal fluctuations. These findings highlight the need to reconceptualise suicidality during menopause not merely as a symptom of depression, but as a unique phenomenon influenced by complex biological and psychosocial interactions (van Ballegooijen et al., 2019; Kulkarni et al., 2018; Martin-Key et al., 2024), especially given that suicide is among the leading causes of death in midlife women globally, with women aged 50–54 representing the highest-risk female demographic in many countries (ABS, 2022; CDC, 2022; ONS, 2024; WHO, 2024).

Hormonal fluctuations during menopause, particularly rapid declines in oestrogen and progesterone, are known to impact mood regulation via serotonergic and dopaminergic pathways (Halbreich & Kahn, 2001; Schmidt et al., 2015; Soares & Zitek, 2008). In the quantitative study, the observed psychological improvement in those receiving combined oestrogen, progesterone, and testosterone suggests that HRT may play a key role in stabilising mood during this transition, especially when formulations are tailored to the individual. While oestrogen's antidepressant properties have been widely discussed (Herson & Kulkarni, 2022), the inclusion of testosterone in effective regimens invites further exploration of its mood-related effects, especially in light of research linking both elevated and deficient testosterone levels to suicidal ideation in women (Liu et al., 2021; Sher et al., 2014; Zhang et al., 2015). Future studies should investigate how hormonal sensitivity, HRT type, and underlying psychiatric vulnerabilities interact to influence risk.

Notably, it is the perimenopausal stage – the years of hormonal transition leading up to menopause – that appears to be the most vulnerable period for the emergence of suicidal ideation and mood dysregulation. During this stage, fluctuations in oestrogen and progesterone are particularly pronounced, contributing to symptoms such as irritability, emotional lability, and hopelessness (Soares & Zitek, 2008). Evidence reviewed in Chapter 3 indicated that rates of suicidal ideation and behaviours peak during

perimenopause, often in the absence of a formal depression diagnosis (An et al., 2022; Kulkarni et al., 2018; Maki et al., 2019; Martin-Key et al., 2024; Nakanishi et al., 2013; Usall et al., 2009). This thesis builds on these findings by demonstrating that suicidality was especially prevalent among participants identified as perimenopausal, with both qualitative and quantitative data pointing to cyclical and hormonally mediated patterns of distress that were distinct from stable depressive trajectories.

Beyond the neuroendocrine mechanisms, menopause represents a confluence of midlife stressors that may collectively exacerbate suicidality. Participants in the qualitative studies described feeling overwhelmed by caregiving roles, career stagnation, physical discomfort, and a perceived loss of identity or purpose: factors that compounded emotional distress and contributed to feelings of entrapment or hopelessness. This aligns with literature indicating that suicidality in midlife women is often shaped by social and existential pressures as much as biological factors (Barber & Charles, 2023; Hendriks et al., in press; Townsend, 2024). The combination of hormone-driven mood instability with these psychosocial burdens emphasises the importance of integrated biopsychosocial models when assessing suicide risk during this period. However, despite this complexity, suicidality in midlife women is frequently under-recognised or dismissed, which may be partly explained by the well-documented gender paradox of suicidal behaviour, wherein women report significantly higher rates of suicidal ideation and attempts but are less likely to die by suicide compared to men (Canetto & Sakinofsky, 1998; McManus et al., 2016). As a result, women's suicidality is often medicalised, trivialised, or treated as secondary to depressive symptoms, rather than acknowledged as a legitimate and urgent clinical concern. This context is essential for understanding why suicidology frameworks have historically neglected menopause-related risk factors.

Current suicidology models, such as the IMV Model, have limited applicability to menopausal populations due to their androcentric origins and general focus on acute crises rather than chronic, cyclical distress (Mallon, 2018; O'Connor, 2011; Souza et al., 2024). The lived experiences described in the qualitative studies of this thesis, including feelings of being invisible and dismissed, suggest that existing frameworks fail to capture

the long-term emotional erosion that can occur during the menopausal transition. Furthermore, standard diagnostic tools such as the PHQ-9 may not adequately reflect the specific dimensions of menopausal mental health, including emotional blunting, identity loss, or bodily disconnection, which can serve as precursors to suicidal ideation (van Bentum et al., 2021; Kulkarni et al., 2018). Incorporating menopause-specific instruments like the Peri-Menopausal Depression Scale (MENO-D) into routine screening may allow for earlier and more accurate identification of at-risk individuals. In this thesis, the MENO-D captured a broader range of hormonally driven symptoms and identified mood disturbances not detected by the PHQ-9 alone, highlighting its potential value in complementing standard depression screening tools during the menopausal transition.

Finally, these findings highlight a broader issue of invisibility and trivialisation of menopausal distress within both clinical and social contexts. Several women in the qualitative studies recounted being labelled as "hormonal," "dramatic," or "attention-seeking" by health professionals and family members when disclosing suicidal thoughts. Such characterisations not only delegitimise women's experiences but may contribute to delayed or inadequate intervention which reflects a longstanding cultural narrative in which female suicidality is feminised, pathologised, or dismissed, while male suicidality is often framed in more serious or stoic terms (Canetto, 1997; Canetto & Sakinofsky, 1998; Mallon et al., 2016; Townsend, 2024a, 2024b). Addressing this disparity requires not only clinical reform but also a shift in societal attitudes toward aging women and the legitimacy of their emotional pain. These findings reinforce the need for a life course perspective in suicidology, recognising that menopausal suicidality does not arise in isolation but is shaped by earlier reproductive transitions and cumulative psychosocial stressors, as discussed in Chapter 1.

Taken together, these findings suggest that suicidality during menopause is a multi-layered, under-recognised phenomenon requiring urgent attention. Prevention strategies must extend beyond generic mental health support and consider the unique hormonal, psychological, and social challenges faced by women during this life stage. In ignoring this intersection of biology, gender, and psychological pain, we risk abandoning women at one of the most critical junctures of their lives. Therefore, by acknowledging the

legitimacy of menopausal suicidality and implementing targeted, sensitive interventions, both the visibility and outcomes of this vulnerable group can be meaningfully improved.

Suicidality as a Distinct Outcome of Menopause

Although suicidality is often assessed as a component of depression, findings from the present thesis suggest that it may function as a psychologically and clinically distinct phenomenon during the menopausal transition. In the quantitative study, suicidal ideation (measured using PHQ-9 item 9) showed a different pattern of change than overall depression scores, with no significant interaction between HRT regime and suicidality despite clear treatment effects on total depressive symptoms. This divergence supports emerging evidence that suicidal thoughts, particularly in hormonally sensitive populations, may not be reducible to mood disorders alone (van Ballegooijen et al., 2019; van Bentum et al., 2021). Instead, suicidality may reflect specific cognitive-affective processes, such as feelings of burdensomeness, disconnection, or existential despair, that are not adequately captured by aggregate depression scales. This distinction echoes ongoing debates in suicidology regarding the need to conceptualise suicidal ideation as a unique outcome, with models such as the Interpersonal Theory of Suicide (Joiner, 2005) and IMV Model (O'Connor, 2011) highlighting the roles of burdensomeness, entrapment, and disconnectedness; factors that may operate independently of depressive symptoms. However, as discussed in Chapter 1, these models have rarely been validated in midlife or menopausal populations, raising questions about their applicability to hormonally sensitive life stages.

This distinction was reinforced by qualitative data in which women reported suicidal thinking in the absence of what they considered 'depression'. Several participants described intense emotional detachment, hopelessness, or a wish for life to end without identifying with the label of being depressed or suicidal. These narratives align with critiques raised in the systematic review and literature review chapters, which highlight how suicidality during menopause is often medicalised, obscured, or reframed as hormonal 'moodiness', resulting in under-identification and under-treatment (Canetto & Sakinofsky, 1998; Mallon et al., 2016; Townsend, 2024). The tendency to treat suicidality

as a secondary outcome, subsumed within total depression scores, risks overlooking those for whom suicidal ideation exists independently of major depressive disorder. This is consistent with longstanding feminist critiques of suicide classification, which argue that women's distress is more likely to be framed as emotional instability or psychiatric illness (Canetto, 1997; Canetto & Sakinofsky, 1998). As a result, suicidal ideation in midlife women is often interpreted through a medicalised lens that minimises its severity or misattributes it solely to mood fluctuations.

Importantly, the present study found that participants who reported suicidal ideation at baseline experienced the greatest reductions in suicidality over time, regardless of HRT regimen. While some of this improvement could be partially attributed to statistical regression to the mean – a phenomenon where extreme scores tend to move closer to the average on repeated measurement – it is important to interpret this cautiously given the nature of suicidality as a low-base-rate and non-normally distributed outcome (Courtet & Oquendo, 2015). In this context, reductions in suicidality are less likely to reflect statistical artefact alone, particularly given that participants with low baseline suicidality did not show corresponding increases over time. The magnitude, directionality, and consistency of change, alongside the clinical improvements observed in broader mood measures, suggest a genuine therapeutic effect. This is clinically significant, as suicidal ideation in midlife populations is often assumed to signal chronicity or poor treatment response (Denneson et al., 2020; Xiao & Brown, 2023). These findings indicate that menopausal suicidality may be more responsive to timely intervention than previously assumed, especially when care is appropriately tailored to the hormonal and psychosocial context. This aligns with qualitative reports of women arriving at specialist services in a state of acute crisis, often having exhausted other avenues, as many described HRT as a last resort that, unexpectedly, had transformative effects on their mental state. This reinforces the importance of identifying and supporting this subgroup early in treatment, ideally through integrated menopause and mental health services that can respond to both hormonal and psychological dimensions of risk.

The widespread use of the PHQ-9 as a primary screening tool in both research and clinical settings may inadvertently obscure suicidality as a distinct clinical outcome. Item

9 of the PHQ-9, which assesses thoughts of death or self-harm, is frequently treated as a generalised 'warning sign' rather than examined in depth as a standalone symptom (Louzon et al., 2016). While prior research suggests that many individuals who endorse item 9 do not report active suicidal intent upon further assessment (Walker et al., 2011), this may be less applicable in clinical samples such as the present one, where distress levels were high and suicidality was often meaningfully reported. Nevertheless, discrepancies between PHQ-9 item 9 and gold-standard tools like the Columbia-Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011) raise questions about its specificity in capturing the full scope of suicidality, particularly in hormonally sensitive populations (Na et al., 2018). In this study, while both overall depressive symptoms and suicidal ideation declined over time, the trajectory of suicidality appeared distinct, showing no significant interaction with HRT group and diverging from patterns observed in the total PHQ-9 score, therefore, suggests that suicidality may not simply track with general mood improvement and reinforces the need to assess it as an independent clinical outcome. To ensure that these findings were not influenced by violations of ANOVA assumptions due to the skewed distribution of PHQ-9 item 9, a supplementary binary logistic regression was conducted. This analysis, which modelled suicidality as a dichotomous outcome and included the same covariates (antidepressant use, baseline HRT status, baseline suicidality, and time between appointments), confirmed that HRT regimen did not predict suicidality at follow-up. Antidepressant use remained the only significant independent predictor. The convergence of results across both analytic approaches strengthens confidence that the observed reduction in suicidality was genuine and independent of hormone type, underscoring that this improvement represents a meaningful clinical change rather than a statistical artefact. While more granular suicidality measures such as the C-SSRS would have strengthened the analysis, the study was limited by the routine data collected by Newson Health, where PHQ-9 item 9 represented the only available indicator of suicidality.

In contrast to general depression scales, the MENO-D used in this study offered a richer window into the subjective experience of psychological decline during the menopausal transition, particularly in relation to suicidality. Notably, item 4 of the MENO-D, which assesses low self-worth, showed a meaningful correlation with PHQ-9 item 9 (suicidal

ideation), yet the two were not interchangeable. While both reflect emotional vulnerability, MENO-D item 4 appears to capture a more context-specific expression of distress; one grounded in the identity disruption, purposelessness, and internalised age-related stigma frequently described by midlife women in the qualitative study. These experiences were often not perceived by participants as 'depression' in the clinical sense, but rather as a form of existential disengagement or emotional erosion.

This supports longstanding critiques that generic screening tools such as the PHQ-9 may be inadequate for detecting menopause-related psychological risk, given their limited sensitivity to the biopsychosocial complexities of this life stage (Brinton et al., 2015; Kulkarni et al., 2018), as well as other female life stages (Kornstein, 2010). Menopause-specific instruments like the MENO-D were developed to address this gap, aiming to better capture the interplay between hormonal changes and psychological symptoms, however, in this study, while MENO-D item 4 demonstrated conceptual value in identifying suicidality-related distress, total MENO-D scores were less sensitive to change over time compared to the PHQ-9. This raises questions about the scale's responsiveness to intervention and highlights a key tension in menopause-focused assessment: the challenge of balancing lived experience and contextual relevance with psychometric reliability and clinical utility.

These findings emphasise the need for stage-sensitive, gender-informed tools that are capable of both identifying menopause-specific risk factors and tracking meaningful symptom change. A life course perspective further emphasises the importance of tailoring suicide prevention strategies to transitional phases such as perimenopause, where identity disruption, shifting roles, and biological changes may interact to create distinct forms of psychological vulnerability (Hendriks et al., in press; Son & Lee, 2025). Recognising suicidality in this context as both time-sensitive and hormonally mediated enhances the case for specific tools and interventions. Without such tailored approaches, the psychological burden of midlife women – particularly suicidality – risks being overlooked, misclassified, or trivialised in both research and clinical contexts. Ultimately, reframing suicidality as a distinct and context-dependent outcome may be

key to improving both recognition and response for midlife women experiencing emotional crises during the menopausal transition.

Cyclic and Embodied Nature of Menopausal Distress

Beyond its psychological manifestations, distress during the menopausal transition was experienced by many participants as both cyclical and deeply embodied in the current thesis, highlighting the need to consider how hormonal, temporal, and somatic processes shape women's mental health in ways not captured by traditional psychiatric models. In the qualitative studies, women consistently described emotional symptoms – including suicidal ideation – as recurrent, wave-like, or rhythmically worsening, often correlating with perceived hormonal shifts. These episodes were frequently experienced as physiologically driven, emerging suddenly and without clear psychological triggers. For many, this unpredictability contributed to a profound sense of loss of control over both body and mind.

The cyclical and embodied nature of distress described by participants aligns with feminist health psychology perspectives, which highlight how women's emotional suffering, particularly when expressed through the body, is frequently misunderstood, medicalised, or dismissed (Chrisler & Johnston-Robledo, 2018; Gask, 2015; Ussher, 2006). These scholars argue that cultural discomfort with female aging, hormonal change, and emotional expression often leads to the pathologisation of normal transitional experiences, such as those occurring during menopause. This has been echoed in qualitative research, where women reported feeling silenced, stigmatised, and alienated due to prevailing social discourses surrounding menopause (Barber & Charles, 2023; Nosek, 2007). Similarly, Kalra and colleagues (2020) argue that 'menopause distress' should be viewed as a distinct emotional and psychosocial response to the intersecting biomedical and societal demands of menopause, rather than automatically categorised as a psychiatric disorder. This interpretation is further supported by neurobiological models, including those proposed by Brinton and colleagues (2015), who conceptualise perimenopause as a neurological transition state. According to this view, fluctuating oestrogen levels disrupt brain regions involved in mood, cognition, and

emotion regulation, potentially explaining the episodic intensity of distress observed in the present study. Together, these frameworks underscore the need for assessment tools that can respond not only to the severity of symptoms, but to their hormonal, temporal, and somatic variability, as standard screening tools are typically designed to capture stable or average symptom severity, making them poorly equipped to detect rhythmic fluctuations in mood or physiological distress linked to hormonal change (Brandon et al., 2008).

While the quantitative study did not directly measure symptom cyclicity, the high baseline prevalence of perimenopausal women, and the distinctive treatment response patterns across HRT regimens, offer indirect support for this interpretation. Participants on combined HRT (oestrogen, progesterone, and testosterone) demonstrated the most substantial reduction in both depressive and psychological symptoms, echoing prior research (Stuursma et al., 2022; Zweifel & O'Brien, 1997) suggesting that stabilisation of hormonal rhythms may play a critical role in alleviating mood volatility (Alexander et al., 2007; Ancelin et al., 2007; Andersen et al., 2023). Moreover, item-level analyses revealed that distress linked to suicidality and self-worth was particularly responsive to these treatments, further implying a biologically mediated component to the emotional turbulence described by participants. This interpretation resonates with prior findings in premenstrual dysphoric disorder (PMDD) and postpartum depression (PPD), where hormonal fluctuation, not absolute hormone levels, has been implicated in mood disruption (Schmidt et al., 2015; Gordon et al., 2022).

Crucially, the embodied nature of this distress (i.e. hot flushes, sleep disruption, fatigue, cognitive fog, physical pain) was not simply a background context to the emotional experiences, but often intertwined with and amplifying them (Finset et al., 2004; Gibson et al., 2019). Participants in the qualitative study spoke of their physical symptoms as cumulative and wearing, contributing to feelings of despair, disconnection, and ultimately, suicidal thoughts. This co-occurrence of physical and emotional pain supports the argument that suicidality in menopause should not be approached solely as a cognitive or affective event, but as a whole-body experience shaped by hormonal, psychosocial, and existential factors.

Collectively, these findings suggest that menopausal distress is not simply a linear expression of mood pathology, but a temporally patterned and embodied form of suffering that demands stage-sensitive recognition. This cyclical presentation also disrupts the chrononormative assumptions embedded in many psychiatric models, which tend to pathologise non-linear, recurrent, or hormonally timed forms of distress (Nosek, 2007). Therefore, recognising that emotional recovery and decline may follow a fluctuating, rather than progressive, course is key to appropriately supporting women during the menopausal transition. By acknowledging the cyclical and physiological nature of distress in this context, clinicians and researchers can move toward a more integrated, empathetic, and biologically informed understanding of midlife women's mental health: one that validates the fluctuating, complex realities of their lived experience.

The Hidden Impact on Caregivers: Emotional and Relational Strain

While suicidality during menopause is often framed as an individual crisis, the findings of this thesis highlight its deeply relational consequences, with significant psychological and practical burdens falling on caregivers. Menopause healthcare professionals (MHCPs) frequently described the emotional toll of witnessing suicidal distress in menopausal women as “exhausting,” and “distressing”, as the unpredictability and intensity of emotional outbursts, suicidal episodes, and mental health deterioration created an atmosphere of persistent anxiety and hypervigilance, often leading to caregiver burnout, resentment, and suicidality (Nosek, 2008; Sun & Long, 2008; Wolk-Wasserman, 1986). These findings align with literature introduced in Chapter 1, which identifies caregivers as an overlooked yet highly vulnerable group, as noted by Carers UK (2023), who reported that almost half of caregivers report symptoms of depression, and over a third experience suicidal thoughts themselves. This is particularly concerning in the context of menopause-related mental health, where emotional volatility and suicidality are often misunderstood or minimised (Short, 2019), increasing the emotional strain on those providing support. Research has also shown that caregivers frequently take on significant emotional labour and experience anticipatory anxiety and depression

for the future (García-Torres et al., 2020; Lyonette, 2015; Winder, 2009), adding to their current distress. Within menopause care specifically, this is compounded by broader systemic and social neglect of midlife women's health, with clinicians and carers often left unsupported to manage crises that fall between mental health and hormonal care pathways (Kulkarni et al., 2018; Martin-Key et al., 2024).

This thesis adds important contextual depth to this literature, revealing how suicidality during menopause creates unique relational ruptures, as several carers described their own mental health worsening due to constant fear for their loved one's safety, a lack of systemic support, and feelings of guilt or inadequacy when unable to de-escalate crises. These experiences mirror those of caregivers in other high-stress settings, such as cancer or dementia care, where emotional exhaustion is well-documented (O'Dwyer et al., 2016; Shaffer et al., 2017), but they have not been explored in relation to menopausal mental health. Even when carers were not the primary source of emotional support, research shows that simply bearing witness to prolonged distress had lasting psychological effects (Rytterström et al., 2020).

The relational impact of menopausal suicidality also surfaced in the women's own narratives in Chapter 5, as participants described feeling "like a burden" or believing their distress was "too much" for others to deal with, contributing to further shame and emotional withdrawal. These internalised feelings may amplify the interpersonal strain on caregivers, who must navigate both the emotional fallout and the communication challenges that arise when their loved ones retreat inward. This aligns with research showing that the risk of suicidality in menopausal women is moderated by levels of social support, reinforcing the relational vulnerability embedded in this life stage (Murphy et al., 2013; Nakanishi et al., 2023; Sherr et al., 2016; Stacy et al., 2022). Even healthcare professionals described systemic failures that exacerbated their emotional load, as they described feeling "out of their depth" or "helpless" when supporting suicidal women during the menopausal transition, citing limited training on the hormonal components of mood dysregulation (Hendriks et al., in press). Several participants reflected on the emotional toll of such cases, particularly when they involved suicidal ideation or completed suicide, which left lasting psychological effects (Saini et al., 2016).

These accounts reflect broader concerns in the literature regarding the historical separation of menopause from mainstream mental health care (Kulkarni et al., 2018; Maki & Freeman, 2020), therefore, despite growing awareness of the psychological effects of hormonal transition, most services continue to lack integrated, menopause-informed approaches (Lorenzo et al., 2021; Swaminathan et al., 2023; Thatcher et al., 2024). This fragmentation not only compromises outcomes for midlife women but also places a disproportionate emotional and clinical burden on both informal carers and frontline professionals who are unsupported in navigating hormonally mediated mental health crises.

This thesis also emphasises a clear need for stigma reduction, as both caregivers and the women they supported reported shame and silence surrounding suicidality, particularly within the family. The taboo around discussing menopause and mental health created further barriers to disclosure, support, and open communication; a finding consistent with broader literature on suicide stigma (McLaughlin et al., 2014; McGill et al., 2019). Participants expressed a strong desire for services that could help them talk to children or other family members about these issues, suggesting that future interventions must include not just clinical care but relational tools and psychoeducation for the wider support system.

Overall, these findings suggest that menopausal suicidality reverberates far beyond the individual experiencing it. Carers, whether partners, friends, or clinicians, absorb much of the psychological fallout while receiving minimal recognition or support. This calls for a shift in both clinical and research paradigms: to recognise caregivers not only as witnesses to distress but as secondary recipients of its emotional toll. Integrated care models should include caregiver wellbeing as a core outcome, offering structured support, crisis training, and financial assistance to those carrying the additional, unseen weight of menopausal suicidality.

Effectiveness of Combined HRT on Psychological Outcomes

Findings from the quantitative study suggest that multi-hormonal therapy regimens, particularly those that include a combination of oestrogen, progesterone, and testosterone, may offer meaningful psychological benefits to menopausal women experiencing significant distress (Stuursma et al., 2022; Zweifel & O'Brien, 1997). While improvements in depressive symptoms were observed across all HRT groups, participants receiving combination regimens showed the most substantial reductions in both overall mood disturbance and self-reported suicidality. This is consistent with previous studies highlighting the mood-stabilising effects of oestrogen (Kulkarni et al., 2018; Maki & Freeman, 2020), while also extending the evidence base by demonstrating the potential additive value of progesterone and testosterone in treating hormonally mediated mood disruption (Liu et al., 2021; Sher et al., 2014; Zhang et al., 2015), as discussed earlier.

This finding was echoed in the qualitative studies, where women often described a marked psychological shift following appropriate HRT intervention. Several participants spoke of a return to emotional clarity, energy, or even personality after beginning combined HRT, while others described relief from longstanding emotional dysregulation that they had previously assumed was unrelated to hormones. These accounts suggest that for some women, the effect of HRT was not simply symptom reduction, but a restoration of cognitive and emotional coherence.

The distinctiveness of this treatment response is particularly noteworthy in light of the current study's high baseline rates of psychological distress and suicidal ideation. Nearly 17% of participants reported suicidal thoughts at intake (total n = 957), which is a figure far higher than general UK female midlife population estimates, which equate to less than 0.01% annually (based on rates per 100,000; ONS, 2024), suggesting that women often only seek specialist menopause care during periods of severe emotional crisis. These individuals showed significant improvement over time, regardless of HRT type, which challenges the notion that suicidality in midlife is inherently chronic or treatment-resistant (Xiao & Brown, 2023). Instead, it points to the value of appropriately targeted hormonal interventions during hormonally sensitive periods such as perimenopause,

particularly when suicidal ideation is present (An et al., 2022; Kulkarni et al., 2018; Maki et al., 2019; Martin-Key et al., 2024; Nakanishi et al., 2013; Usall et al., 2009), also discussed earlier.

These findings add to a growing body of literature supporting the use of multi-hormonal HRT for complex psychological symptoms during menopause. The present study uniquely highlights the value of including testosterone – a hormone traditionally underutilised in menopause care as it is not licensed for women in the UK (Arnold et al., 2025) – even though emerging evidence suggests that testosterone may play a role in modulating energy, mood, and cognitive clarity (Sher et al., 2014; Liu et al., 2021), all of which were recurrent themes in the qualitative narratives of distress. By tailoring HRT to the individual's symptom profile and hormonal sensitivity, treatment may move beyond symptom suppression toward meaningful psychological recovery.

However, the uptake of multi-hormonal HRT in clinical practice remains limited, in part due to longstanding fears stemming from the Women's Health Initiative (WHI) trial published in 2002 (Rossouw et al., 2002). This large-scale study reported increased risks of breast cancer, stroke, and cardiovascular events associated with combined oestrogen-progestin therapy, leading to a dramatic global decline in HRT prescribing. Subsequent re-analyses have clarified that these risks were largely dependent on age, timing of initiation, and the specific formulations used; factors not always accounted for in the original interpretation (Bassuk & Manson, 2016; Bhupathiraju & Manson, 2014; Chester et al., 2018). Nevertheless, the legacy of the WHI continues to shape both clinical hesitancy and patient concern, often overshadowing more recent evidence of the potential psychological and systemic benefits of well-tailored, multi-hormonal regimens.

Lifestyle and Clinical Covariates Matter

In addition to hormonal treatment, this thesis identified several clinical and demographic covariates that significantly influenced psychological outcomes. Consistent with previous research, higher baseline depression scores were associated with greater improvement over time, potentially reflecting a regression to the mean or a ceiling effect

whereby those with more severe symptoms have more room for symptom reduction (Barnett et al., 2005; Cuijpers et al., 2008; Fournier et al., 2010). However, this pattern also highlights the importance of offering timely intervention to women in acute distress, as they may be particularly receptive to clinical support, including HRT and structured mental health input.

BMI and smoking status also emerged as significant covariates, with higher BMI and current smoking associated with poorer mental health outcomes. While this aligns with literature linking these factors to increased inflammation, reduced hormonal responsiveness, and elevated mood disorder risk (Gold et al., 2016; Zhu et al., 2021), it is important to note the likely bi-directional relationship: smoking and dietary patterns are also common coping mechanisms for psychological distress, which may both reflect and exacerbate underlying mental health challenges (Knüppel et al., 2018; Leung et al., 2012). However, the association between higher BMI specifically and poorer psychological wellbeing may also reflect more than just biological vulnerability, as body image dissatisfaction is well documented in menopausal women and has been closely linked to low self-worth, depressive symptoms, and suicidality (Blake & Komesu, 2020; Freeman, 2015). As the body undergoes visible changes during midlife, such as weight gain (specifically around the abdomen), muscle loss, or skin aging, many women report experiencing a sense of betrayal, shame, or disconnection from their physical selves (Thomas et al., 2019). This was echoed in the qualitative data, where participants described feeling 'alien' in their own body or struggling with a sense of deterioration, which compounded emotional distress. Research also suggests that sociocultural ideals around thinness and youth can intensify body dissatisfaction during this life stage, particularly among women who internalise ageist or appearance-based standards (Lewis-Smith et al., 2018; Marshall et al., 2012).

Importantly, these issues intersect with self-worth and identity (Polivy & Herman, 2007; Smith et al., 2019), which were both salient in the present study's findings. As noted in the MENO-D item analysis, low self-worth was strongly correlated with suicidal ideation, suggesting that body image concerns may be a meaningful psychological contributor to risk. These findings underline the importance of addressing physical self-perception and

embodied identity in both clinical assessment and intervention. They also reinforce the value of integrated care models that move beyond symptom management to support women's relational, physical, and emotional sense of self during the menopausal transition. Notably, the effects of lifestyle-related variables were evident even after accounting for HRT type, highlighting that menopausal mental health must be understood through an integrated biopsychosocial framework. Therefore, while hormonal regulation is central, it is not the sole driver of mood and suicidality during this transition.

Alcohol use was not included as a covariate in the present analysis due to limitations in the available clinical data, which documented alcohol intake only as a binary “yes/no” field, without contextual information regarding frequency, volume, or use patterns. This lack of granularity precluded meaningful interpretation of alcohol’s psychological or physiological relevance in relation to mental health outcomes (Nguyen et al., 2019; Poulton et al., 2017). Nonetheless, the intersection of alcohol use and menopausal distress warrants further attention, as emerging evidence suggests a bidirectional relationship in which alcohol may be used as a coping mechanism for sleep disturbance, anxiety, or emotional volatility (Lingford-Hughes et al., 2002; Woods & Mitchell, 2010) – common symptoms of menopause (National Health Service [NHS], 2022) – while simultaneously contributing to neuroendocrine disruption and heightened vulnerability to depressive symptoms and suicidality (Milic et al., 2018; Sher, 2006; Walther et al., 2017). Recent reviews also emphasise that alcohol use can worsen menopausal symptoms such as vasomotor disturbances, sleep disruption, and sexual dysfunction, further compounding psychological distress (Shihab et al., 2024). Additionally, research indicates that midlife women may be at increased risk for under-recognised hazardous drinking, shaped by shifting social roles, identity disruption, and accumulated stressors during the menopausal transition (Wilsnack & Wilsnack, 2016). The exclusion of this variable represents a limitation of the current study and reflects a broader need for menopause-sensitive approaches to routine data collection, particularly regarding substance use and its potential interaction with mood and hormonal health.

These results support a more nuanced understanding of menopausal mental health, where individual treatment response is shaped not only by HRT formulation but by a constellation of biopsychosocial factors. While hormonal intervention remains essential, it is unlikely to be sufficient in isolation for those with compounding lifestyle risks or severe distress. Future service design should prioritise early identification of these high-risk groups and ensure that HRT provision is embedded within a broader framework of mental health, lifestyle, and social support interventions.

Socio-Cultural and Systemic Barriers to Menopause Care

The findings of this thesis highlight the deep structural and cultural barriers that continue to obstruct appropriate recognition and care for menopausal women experiencing suicidality. Across the qualitative studies, women and healthcare professionals alike described a pervasive sense of dismissal, minimisation, and systemic neglect. This trivialisation is not merely rhetorical; it has tangible consequences for treatment pathways, as the persistent fragmentation between mental health and menopause services, described by healthcare professionals in the current thesis as "exhausting" and "disjointed", mirrors critiques in the literature about the historical separation of hormonal and psychiatric care (Riecher-Rössler, 2019; Short, 2019). This divide contributes to delayed or inadequate responses, particularly when suicidality is mistakenly treated solely as a symptom of depression, rather than a distinct, hormonally mediated crisis. As discussed in Chapter 5, many women experiencing suicidality during perimenopause were prescribed antidepressants rather than being assessed for hormonal causes, despite evidence that standard antidepressant therapy may be less effective in this population unless combined with HRT (Gordon & Girdler, 2014; Hendriks et al., in press; Toffol et al., 2015).

Cultural narratives surrounding aging and femininity further compound these issues. In many societies, menopause is viewed as a marker of decline, with loss of fertility and youth often interpreted as a loss of social value (Chrisler, 2008; Ussher, 2006). This stigma, rooted in gendered ageism, contributes to feelings of invisibility, diminished purpose, and grief (Barber & Charles, 2023; Kalra et al., 2020), which were widely

reported by participants in Chapter 5. The emotional toll of being perceived as 'past their prime' especially in professional settings where midlife women face workplace exclusion (Qazi et al., 2024), was echoed by both women and healthcare professionals, and is well-supported by evidence that workplace ageism significantly undermines psychological wellbeing (McGann et al., 2016; Saadati, 2024; Roscigno et al., 2022).

The cumulative effects of these social forces (i.e. stigma, dismissal, lack of coordinated care, and structural invisibility) reflect a broader failure to adopt a life course approach to women's mental health. As argued in Chapter 1, suicidality in menopause is not an isolated or sudden event, but the product of intersecting biological, psychological, and sociocultural transitions that remain poorly recognised in dominant suicidology frameworks. These frameworks, rooted in androcentric assumptions, often fail to capture the cyclical, chronic, and context-dependent nature of menopausal distress (Mallon, 2018; O'Connor, 2011), reinforcing a system in which women's suffering is obscured both diagnostically and discursively.

To meaningfully improve outcomes for this population, integrated biopsychosocial models are urgently needed: ones that validate the embodied experiences of menopause, address social inequalities, and provide stage-sensitive interventions. Without structural reform and a cultural shift toward legitimising midlife women's distress, suicidality during the menopausal transition will remain under-detected, under-theorised, and under-treated.

Strengths and Limitations

The strengths and limitations of individual studies have been addressed in their respective chapters. This section therefore reflects on the overarching strengths and limitations of the thesis as a whole, considering its methodological scope, interdisciplinary contributions, and practical implications.

A major strength of this thesis is its mixed-methods design, which integrates quantitative, qualitative, and systematic review approaches to explore suicidality during the menopausal transition. This triangulation allowed for a richer, more nuanced

understanding of a phenomenon that is often under-researched, enabling the thesis to examine not only prevalence and treatment effects, but also lived experience, carer perspectives, and systemic issues within healthcare provision. The qualitative studies in particular amplify the voices of women and caregivers – groups frequently marginalised in both suicidology and menopause literature – while the quantitative analysis offers valuable insight into treatment responsiveness and symptom trajectories across a large clinical sample using objective and reproducible methods.

The use of a specialist menopause clinic as a data source for the quantitative study represents another strength, offering access to a well-characterised and relevant population. By exploring individual HRT regimens and incorporating covariates such as BMI, smoking status, and antidepressant use, the quantitative work moves beyond simple group comparisons and toward more person-centred clinical interpretation. Similarly, the decision to analyse suicidality (PHQ-9 item 9) separately from total depression scores reflects a conceptual strength, aligning with feminist critiques and emerging literature which argues that suicidality, especially in women, is often misinterpreted or reduced to depressive pathology, and conceptualises suicidality as a distinct, context-sensitive outcome (Stoppard, 1999; Saeed et al., 2024). However, the use of PHQ-9 item 9 as the sole measure of suicidality also constitutes a limitation. More comprehensive instruments, such as the Columbia-Suicide Severity Rating Scale (C-SSRS), offer greater sensitivity and specificity in distinguishing passive ideation, active intent, and preparatory behaviours. The decision not to use the C-SSRS was constrained by the nature of the data, which were drawn from routinely collected clinical measures within the menopause clinic. Similarly, reliance on questionnaire scores rather than structured clinical assessment represents an important limitation. While validated scales such as the PHQ-9 and MENO-D are widely used and facilitate comparison across studies, they may not capture diagnostic nuance or clinical context, and self-reported symptom ratings can differ from clinician-evaluated presentations. Future studies would therefore benefit from combining standardised questionnaires with formal clinical interviews or diagnostic assessments to enhance validity and clinical interpretability. While PHQ-9 item 9 provided a pragmatic and widely used indicator of suicidal thoughts,

future studies would benefit from including gold-standard suicidality assessments to enable more nuanced analysis and improve clinical interpretability.

The qualitative studies are strengthened by their deliberate inclusion of diverse participant perspectives, encompassing both menopausal women experiencing psychological distress and the healthcare professionals and carers supporting them. This dual perspective not only enriched the data but allowed the thesis to examine the interplay between individual experience and systemic response. Importantly, participants were recruited from both a private menopause clinic and the general population, enhancing the diversity and ecological validity of the sample. By juxtaposing the lived realities of distress with those responsible for managing it, the analysis was able to interrogate how structural, relational, and institutional failures contribute to psychological risk, deepening understanding beyond intrapersonal explanations. Thematic analyses were conducted using a reflexive, interpretive approach informed by a critical realist epistemology, recognising both the reality of participants' experiences and the sociocultural forces that shape them. Following Braun and Clarke's (2021) model, meaning was treated as co-constructed through active engagement with the data, rather than as something passively discovered. This enabled the development of nuanced, layered themes while avoiding reductive categorisation.

However, several limitations should be acknowledged. First, although the quantitative study includes a relatively large sample size, the quantitative data were drawn from a private menopause clinic. While this had its advantages, it also limited the generalisability of findings as the study did not include the broader UK population or women in under-resourced settings. Socioeconomic, ethnic, and geographical diversity may therefore be under-represented, and future studies should include a wider range of service settings, including NHS clinics, to enhance representativeness. However, this limitation was partially offset by the qualitative studies, which recruited participants from the general population, including women with varying service use histories and backgrounds, thereby contributing a more diverse and ecologically valid perspective to the overall thesis.

Second, the observational nature of the quantitative design limits causal inference. Although time-based changes in depressive symptoms and suicidality were observed, and patterns emerged by HRT formulation, no randomisation or control group was present. Furthermore, several covariates, such as alcohol use, trauma history, and reproductive history, were either absent or poorly recorded in clinical notes, limiting the ability to fully adjust for important confounders. Furthermore, the thesis did not distinguish between spontaneous, surgical, or premature menopause (including primary ovarian insufficiency), despite evidence suggesting that these subtypes may carry different psychological and physiological risks, including a higher suicide rate (Kim Ji-Su et al., 2021; Ryu et al., 2022; Weiss et al., 2016). Women who experience early or iatrogenic menopause may face additional challenges related to identity, grief, or rapid hormonal decline, which may warrant distinct clinical and research attention (Hernández-Angeles & Castelo-Branco, 2016). Future work should consider these subgroups explicitly to better understand how timing and etiology of menopause influence suicidality and mental health.

In the qualitative studies, the depth and richness of narratives were a key strength, yet limitations around sample composition and recall bias must be acknowledged. For instance, participants were identified for interview by clinicians at the menopause clinic and may not represent the full spectrum of menopausal experiences. While this approach helped recruit individuals with relevant lived experience, some women, particularly those in more severe crisis, may have declined to take part which could have unintentionally excluded those most affected by suicidality, limiting insight into the most acute end of the distress spectrum. Caregivers who chose to take part may have done so because of particularly distressing or unresolved experiences, potentially skewing findings toward those with more acute emotional responses.

Another limitation lies in the underrepresentation of transgender and gender-diverse individuals. Despite acknowledging the importance of inclusive terminology and critique of binary sex/gender frameworks in Chapter 1, all participants were cisgender women or carers supporting cisgender women. While this reflects the clinical demographic of the menopause clinic, it also highlights a gap that future research should address by

intentionally recruiting and designing studies that include diverse gender identities. Finally, this thesis contributes conceptually by problematising the dominance of male-centric suicidology frameworks and highlighting how women's distress during menopause is frequently misclassified or trivialised. However, there remains a need for further development of gender- and stage-sensitive theoretical models that can better explain the intersection of hormonal, psychological, and social risk factors. In advocating for these frameworks, this thesis lays the groundwork for future theory-building but stops short of providing a comprehensive model of menopausal suicidality.

In summary, the methodological breadth, feminist lens, and focus on lived experience are key strengths of this thesis, while its limitations lie primarily in representativeness, generalisability, and the constraints of retrospective data. Nonetheless, the thesis makes a unique contribution to an emerging area of clinical and academic concern and offers a foundation for both theoretical advancement and practical intervention in the support of menopausal women experiencing suicidality.

Implications and Future Directions

Clinical Practice

A common limitation of clinical research is the failure to translate findings back into practice or embed them meaningfully within healthcare systems (Jansen et al., 2010; Robinson et al., 2020). As such, it was important for the author to consider not only the academic contribution of the thesis, but also to ensure that its implications and recommendations were practical, contextually relevant, and applicable to clinical settings and service delivery.

The findings of this thesis have clear and immediate relevance for clinical practice, particularly in addressing the intersection between menopause, mental health, and suicidality. Menopausal women experiencing psychological distress, including suicidal ideation, remain underserved in both primary and specialist care settings, often falling between the gaps of psychiatric and gynaecological services (Faubion & Shufelt, 2022; Kulkarni et al., 2018; Maki & Freeman, 2020; Thatcher et al., 2024). This thesis highlights

an urgent need for integrated, stage-sensitive care pathways that acknowledge both the biological and psychosocial complexities of midlife women's mental health.

A central implication is the need for menopause-specific suicide risk assessment. The findings across qualitative and quantitative studies indicate that suicidality during menopause is not always captured by standard depression measures and may emerge independently of formal diagnoses. Tools such as the PHQ-9, although widely used, are not tailored to the cyclical, embodied nature of menopausal distress and risk overlooking those who do not meet diagnostic thresholds but still experience significant suicidal ideation (van Ballegooijen et al., 2019; van Bentum et al., 2021). As demonstrated by the utility of the MENO-D in this thesis, incorporating menopause-specific mental health screening tools in routine practice may facilitate more accurate identification of distress, especially in women presenting with low self-worth, mood instability, or chronic fatigue (Kulkarni et al., 2018). Despite the high frequency with which midlife women present to primary care with non-specific complaints such as these (Reddish, 2004), suicidality is rarely screened for during routine GP consultations, particularly in women, whose distress may often be expressed differently, resulting in it being overlooked (Kruger et al., 2014). Therefore, embedding menopause-sensitive mental health screening within these interactions could represent a low-cost, high-impact strategy for early identification and intervention.

The findings also underscore the therapeutic potential of combined HRT (oestrogen, progesterone, and testosterone) in alleviating depressive and suicidal symptoms in biologically sensitive women. Participants receiving this formulation experienced the most substantial reductions in psychological distress, echoing prior work suggesting the mood-stabilising effects of multi-hormone regimens (Herson & Kulkarni, 2022; Onalan et al., 2005; Reisel et al., 2024; Stuursma et al., 2022). Notably, testosterone is not currently licensed for use in women in the UK and is typically prescribed off-label or privately, mainly for hypoactive sexual desire disorder (HSDD), or general low libido during menopause (British Menopause Society, 2022). However, the findings of this thesis suggest that testosterone, when prescribed as part of a combined regimen, may produce significant psychological benefits, particularly for women presenting with severe

distress. While further research is needed to explore the specific role of testosterone in mood regulation during menopause, these findings support its consideration as a treatment option, as part of broader efforts to develop more individualised, menopause-informed approaches to mental health care. While triple hormone combinations (oestrogen, progesterone, and testosterone) were associated with the greatest improvements in mood and menopause-related distress, suicidality reduced over time across all HRT groups, with no significant differences between regimens. This suggests that while certain combinations may optimise mood outcomes, HRT in general may offer comparable benefits for reducing suicidality among at-risk menopausal women. This emphasises the need for multi-modal interventions that combine hormonal, psychological, and social support (Evans et al., 2024). Importantly, participants who were suicidal at baseline showed meaningful improvements across treatment types, reinforcing the value of early identification and personalised care, even for those presenting in acute crisis (Bagga et al., 2024).

Healthcare professionals in the qualitative study also highlighted the emotional toll of supporting menopausal women in crisis, frequently reporting burnout, helplessness, and a lack of adequate training on the hormonal underpinnings of mental illness. These findings reflect broader systemic challenges, namely, the fragmentation between mental health and menopause care and the broader medical neglect of female suffering (Barber & Charles, 2023; Gorman, 2005; Hendriks et al., in press; Short, 2019). To address this, training for both general practitioners (GPs) and mental health professionals should include menopause-specific content, with a particular focus on the hormonal context of suicidality and how it presents differently from traditional psychiatric models (Strauss et al., 2021). Interdisciplinary collaboration, for instance, co-located mental health and menopause clinics or shared care protocols, could greatly enhance care delivery and reduce the burden on individual practitioners (Andrews, 1999; Maclennan, 1993). Clinicians must also be attentive to the embodied nature of menopausal distress, as illustrated by the co-occurrence of physical symptoms (e.g., sleep disruption, pain, fatigue) and emotional collapse in the qualitative data, as women described feeling “worn down” by the relentlessness of symptoms, which directly contributed to feelings of despair and suicidality (Green, 2011; Li et al., 2017). A biopsychosocial approach that

foregrounds bodily experience as a legitimate site of emotional pain could foster greater empathy and improve engagement, particularly for women who do not identify with conventional mental health labels.

Finally, this thesis calls attention to the structural invisibility of menopausal women within suicidology. Suicidality in this population is shaped by intersecting forces – ageism, gendered expectations, caregiver burden, and lack of tailored services – none of which are adequately addressed by current theoretical or clinical models (Johnson et al., 2020; Townsend, 2024a; Mallon, 2018). Future interventions should adopt a life course approach that acknowledges how reproductive transitions accumulate and interact over time, shaping women's psychological vulnerability in ways that defy linear or acute crisis models.

Improving care for suicidal menopausal women will require systemic, attitudinal, and structural change. This includes investing in gender-responsive suicide prevention, funding menopause-specific training, integrating psychological care into hormone clinics, and listening to women themselves. Without these changes, the suffering of midlife women, particularly those who do not fit within dominant diagnostic or demographic categories, risks remaining unrecognised, untreated, and unspoken.

Policy

The findings of this thesis also hold significant implications for health policy. At present, national strategies for suicide prevention, menopause care, and women's mental health remain limited, with little formal recognition of the unique risks faced by women during the menopausal transition. Despite increasing awareness of perimenopausal mental health in academic and clinical communities, this has not yet translated into comprehensive, menopause-informed policy frameworks. As this thesis has demonstrated, suicidality during menopause is not only under-acknowledged in healthcare services but also remains invisible within key policy documents, leading to gaps in funding, service provision, and commissioning priorities (Martin-Key et al., 2024).

One critical gap is the lack of reference to suicide risk in national menopause guidelines such as those issued by the National Institute for Health and Care Excellence (NICE; 2024). Although these guidelines have recently addressed mood symptoms and recommended HRT as a treatment option, they do not acknowledge suicidal ideation or behaviours as potential manifestations of perimenopausal distress (NICE, 2024). As this thesis has shown, suicidality may present independently of major depressive disorder and may be cyclical, hormonally mediated, or socially driven; characteristics that are not currently captured in policy guidance. There is an urgent need for NICE and other national bodies to revise clinical guidelines to explicitly include assessment, monitoring, and support for suicidal risk in menopausal women. These gaps also reflect a wider policy failure to recognise the menopause as a life stage requiring coordinated, multidisciplinary care.

Given the findings of this thesis – specifically, that suicidality improved across all hormone treatment groups and that mood outcomes were most improved in women receiving triple-hormone therapy (oestrogen, progesterone, and testosterone) – there is a clear case for incorporating combination HRT regimens into future NICE guidelines as a recognised mental health intervention during menopause. At present, guidelines focus largely on vasomotor symptoms and general mood but omit suicidality and do not differentiate between hormonal formulations (NICE, 2024). Policy updates should explicitly acknowledge the potential psychological benefits of tailored HRT, including combination therapies, and recommend their use within an integrated mental health framework. In parallel, clinician training must be strengthened to support confident, informed prescribing of multi-hormone treatments, along with routine screening for suicidality in midlife women. Without such policy reform, opportunities to reduce suicide risk through accessible, evidence-based hormonal interventions will remain underutilised.

Current mental health policy frameworks, such as the NHS Long Term Plan (NHS England, 2019) and the national suicide prevention strategy (Department of Health and Social Care, 2023), offer limited attention to midlife women or to the intersection of reproductive aging and psychological distress. Although the Women's Health Strategy for

England (Department of Health and Social Care, 2024) signals progress toward more gender-responsive healthcare, its implementation remains uneven and lacks a clear emphasis on suicidality and psychological crisis during menopause. While the strategy's call for comprehensive, biopsychosocial care aligns closely with the findings of this thesis, highlighting the need for integrated responses to hormonal, emotional, and social distress, current service models often fall short.

Initiatives such as Women's Health Hubs offer a promising development by co-locating HRT provision, mental health support, and gynaecological care in a single, accessible setting. Early models have already demonstrated their value and transformative potential. For example, the Modality GP service in Birmingham has reduced unnecessary referrals to secondary care to under 10%, created training opportunities for staff, and delivered up to 1,000 appointments per month, allowing women to access timely, localised support (Royal College of Obstetricians & Gynaecologists, 2024). Similarly, the London Tower Hamlets Women's Health Hub has reported that 95% of patients are seen within 48 hours, with 100% positive feedback from both patients and GPs (Barts Health Trust, 2024). Additionally, the Government's own cost-benefit analysis found the hub model to be good value for money, while estimates from the NHS Confederation suggest that every £1 invested in obstetrics and gynaecology services yields an £11 return (Department of Health & Social Care, 2024). These outcomes illustrate the hubs' potential to relieve pressure on overstretched elective services while improving women's healthcare experiences. Furthermore, NHS England mandated that each Integrated Care Board (ICB) establish at least one Women's Health Hub by December 2024 with the aim of ensuring services are tailored to local needs and widely available across the country (NHS England, 2023). However, despite these promising results, central government funding for Women's Health Hubs is expected to be withdrawn, with the pledge not being renewed in the 2025/26 NHS planning guidance (NHS England, 2025). This withdrawal, although concerning, is perhaps unsurprising given the persistent neglect of women's health issues in UK political discourse (Womersley et al., 2024).

This lack of national recognition is also mirrored at the regional level, where suicide prevention frameworks similarly fail to consider midlife women – or women at all – as a

distinct at-risk group. At a local level, reviewing suicide prevention initiatives in the North West of England including those from Cheshire & Merseyside (Champs Public Health Collaborative, 2022), Lancashire (Lancashire County Council, 2024), and St Helens (St Helens Council, 2023) shows that they routinely prioritise high-risk groups such as young people, men, and those facing socioeconomic adversity, yet not one explicitly identifies women as a priority population, let alone acknowledges the specific vulnerabilities linked to the menopausal transition. Local community-led services, such as Andy's Man Club (2025) and 42nd Street (n.d), have made meaningful strides in addressing suicide risk in men and youth in the North West of England, but there is no equivalent infrastructure for women at the life stage when female suicide risk peaks. This is not a peripheral oversight; it is a systemic failure of recognition and response. Without explicit policy inclusion, midlife women remain structurally excluded from prevention efforts and are rendered invisible at precisely the moment they are most at risk. If suicide prevention frameworks continue to overlook perimenopausal women, opportunities for timely and effective intervention will continue to be missed, with potentially serious consequences for those most at risk.

Policy reform should also address structural inequalities in access to care. Women from socioeconomically disadvantaged backgrounds, racially minoritised groups, and LGBTQIA+ communities may face additional barriers in accessing menopause-informed mental health support, particularly when care is delivered in fragmented or underfunded services (Anto et al., 2025; Kmietowicz, 2021; Westwood, 2024). Additionally, the current over-reliance on private clinics for comprehensive menopause care creates inequities in treatment access, particularly for those unable to afford specialist HRT or psychological interventions (Briggs et al., 2022; Thatcher et al., 2024). This issue is further compounded by a surge in demand for HRT, fuelled by both increased public awareness and the growing number of transgender and non-binary individuals seeking gender-affirming hormone care (Cheung et al., 2018). While this reflects welcome progress in destigmatising hormone and gender-related health, it has also highlighted the limitations of current NHS pathways, as access to HRT remains constrained by long waiting lists, a lack of specialist training among GPs, and the absence of integrated care models (Dintakurti et al., 2022; Toze, 2020). As a result, both menopausal women and gender-

diverse individuals are increasingly turning to private care, reinforcing a two-tiered system that privileges those with financial means and marginalises those without (Oktaba et al., 2023). Policy reform must therefore take a holistic and inclusive approach, ensuring that publicly funded services are not only adequately resourced but also equipped to meet the diverse hormonal health needs of all individuals who rely on them.

Finally, the invisibility of midlife women within public discourse and policy contributes to ongoing stigma and neglect. Public health campaigns, policy consultations, and suicide prevention strategies must actively include the voices of perimenopausal women and caregivers, ensuring that their experiences inform future policy design (Hacking & Mander, 2022), as there is growing evidence that incorporating lived experience into suicide prevention initiatives not only enhances relevance and reach but also improves trust, engagement, and the effectiveness of interventions (Dreier et al., 2021; East et al., 2019; Watling et al., 2020). Meaningful involvement of those directly affected by menopausal suicidality is therefore essential to challenge assumptions, reduce stigma, and design policies that reflect the realities of those most at risk. In addition to lived experience panels, participatory policymaking, and targeted awareness campaigns, community-based models such as Menopause Cafés offer a valuable template for facilitating open, supportive conversations around menopause and mental health (Weiss, 2020). These informal, peer-led spaces have been described as the most effective way to help normalise emotional struggles, reduce isolation, and foster solidarity among menopausal women, especially those who may not otherwise engage with clinical services (Weiss, 2020). Expanding and supporting initiatives like Menopause Cafés within public health frameworks could offer a low-cost, high-impact approach to early intervention and stigma reduction, however, there has been no empirical research exploring their efficacy.

By embedding menopause-informed mental health into national strategies, improving equity in access to care, and ensuring policy is grounded in the lived realities of midlife women, the recommendations of this thesis can support meaningful, structural change. Without such action, suicidal distress in this population will continue to be misrecognised, misclassified, and ultimately, unaddressed.

Education and Public Understanding

A longer-term but critical step toward addressing the invisibility of menopausal suicidality lies in improving how women's health is represented in formal education. At present, reproductive health education in UK secondary and post-16 curricula remains limited and disproportionately focused on menstruation and fertility, with minimal attention to menopause, hormonal mental health, or the psychological impact of reproductive transitions (Biswakarma et al., 2023; Maslowski et al., 2023). Many young people leave school with little understanding of menopause beyond the cessation of periods, contributing to enduring stigma and misinformation.

This thesis argues that menopause and its psychological, social, and cognitive dimensions should be included more thoroughly in GCSE and A-Level biology curricula, as well as in undergraduate medical and nursing curricula, to ensure future clinicians are equipped with a more comprehensive, empathetic understanding of female health across the lifespan. The need for such reform was echoed by clinicians in Chapter 6 of the current thesis, many of whom reported receiving little or no menopause training during their medical education and described feeling underprepared to manage hormonally influenced psychological distress in midlife women (Dintakurti et al., 2022; Hendriks et al., in press). Early education could also help reduce future stigma and empower girls and young women with realistic expectations of what the transition may involve (Barrell, 2023), as comprehensive sexual and reproductive health education has been shown to improve women's health knowledge, autonomy, and confidence, while reducing stigma surrounding reproductive transitions (Najmabadi & Sharifi, 2018). Therefore, embedding this content in national curricula would support a life course approach to women's health policy and may help close the current educational and generational gap in awareness. Furthermore, any educational reform should ensure that menopause is taught in a way that is inclusive of diverse experiences, including those of racially minoritised, LGBTQIA+, and neurodivergent individuals, whose menopausal journeys may be compounded by additional barriers to recognition and care (Baghdadi et al., 2025; Craddock, 2024; Westwood, 2024).

In the absence of adequate formal education, many women in the Chapter 5 of the thesis described turning to media sources, including documentaries, celebrity interviews, podcasts, and social media, as unexpected but powerful catalysts for recognising their own symptoms and seeking help. For some, it was only through hearing others speak openly about menopause that they were able to identify their experiences as hormonally driven, particularly where mood changes or suicidality had previously gone unexplained or been misdiagnosed. These accounts suggest that public-facing media can play a critical role in bridging the gap between lived experience and clinical recognition, especially in contexts where formal education and healthcare pathways remain limited or dismissive (Hendriks et al., in press). Similar patterns have been observed in other areas of mental health, where media exposure has been shown to improve awareness, reduce stigma, and prompt help-seeking in the absence of adequate system-level support (Chung et al., 2019; Gronholm & Thornicroft, 2022; McTernan et al., 2020). Importantly, providing accurate, evidence-based information through these channels may also reduce the confusion and distress many women report when confronted with contradictory or misleading content online (Frennesson et al., 2025; John et al., 2025). In this sense, investment in high-quality, inclusive menopause-related media represents not only an educational tool but a countermeasure against the spread of misinformation.

Future Research

While this thesis provides a novel and multidimensional contribution to understanding suicidality during the menopausal transition, it also highlights several areas that warrant further exploration. The findings across the systematic review, qualitative interviews, and quantitative analyses indicate that suicidality in menopause is under-recognised, poorly understood, and influenced by a complex interplay of hormonal, psychological, and sociocultural factors. However, important questions remain about how best to identify, support, and treat women at risk during this life stage. Firstly, although the quantitative study demonstrated promising effects of combined HRT – including oestrogen, progesterone, and testosterone – on depressive and suicidal symptoms, the sample was drawn exclusively from a private specialist clinic. This introduces questions about

generalisability and equity, as women accessing private care may differ from those using NHS or community services in both clinical presentation and socioeconomic background (Bunk et al., 2024; McCann et al., 2024). Future research should examine these findings in broader, more diverse populations, including publicly funded services, to assess whether similar psychological benefits of multi-hormonal HRT are observed and to explore potential barriers to access. Another important avenue for future research lies in exploring how different routes of HRT administration may influence psychological and suicidality outcomes. While the current thesis focused on hormonal formulations, it did not account for variations in how hormones were delivered (e.g., oral, transdermal, subcutaneous). Transdermal oestrogen, for example, bypasses hepatic metabolism and has been associated with more stable hormone levels and fewer mood-related side effects in some studies (Goodman, 2012; Wharton et al., 2012), therefore future studies should therefore compare different delivery modes to assess whether they influence emotional regulation, suicidality, or treatment engagement; particularly in real-world settings where individual tolerability and preferences may affect clinical outcomes.

In addition to broadening sample settings, future research should include women experiencing early, premature, or induced menopause. This thesis focused primarily on natural perimenopause, meaning that women who underwent surgical menopause or experienced ovarian insufficiency due to chemotherapy, autoimmune disease, or genetic conditions were not directly represented independently, however, they were included in analyses if present. These populations often face more abrupt and intense hormonal disruptions, compounded by grief, identity challenges, and reproductive trauma (Baber & Kwik, 2014; Hamilton, 1999; Pillay & Manyonda, 2022). Research suggests that the psychological risk profiles for these women may differ significantly from those undergoing gradual transitions (Hamoda & Sharma, 2023; Huang et al., 2021), therefore, future studies should explore whether suicidality in these contexts follows different trajectories or responds differently to HRT and psychological interventions. Including these groups is critical for building inclusive, stage-sensitive models of menopausal mental health.

It is also important to note that the qualitative studies highlighted the embodied, cyclical, and often non-diagnostic nature of menopausal distress and suicidality. Many women described emotional disconnection and suicidal thoughts that did not align with conventional notions of depression, which reflects critiques in the literature that standard psychiatric frameworks often fail to capture the hormonally and psychosocially mediated nature of mood disturbance during menopause (Kulkarni et al., 2018; Brinton et al., 2015). Research has increasingly argued that distress during this transition may be non-linear, episodic, and rooted in identity-related disruption or existential concerns that fall outside diagnostic criteria for major depressive disorder (Ussher, 2006; Chrisler & Johnston-Robledo, 2018). This supports the need for further research into stage-sensitive and menopause-specific assessment tools. While the MENO-D scale showed some conceptual utility in capturing self-worth-related distress, it was less sensitive to treatment-related change than the PHQ-9, and it remains underused in clinical settings and rarely validated against broader mood measures or suicidality outcomes. Future psychometric work is needed to refine and validate tools that can meaningfully distinguish menopausal suicidality from other forms of mood disturbance and track symptom change over time.

This thesis identified caregivers – both informal and professional – as an overlooked yet highly impacted group. Mental health and menopause healthcare professionals reported emotional exhaustion, limited training, and a sense of helplessness when supporting women in severe psychological crisis. These findings echo broader concerns in the literature about secondary traumatic stress and burnout among clinicians working with suicidal patients (Killian, 2008; Lee & Lee, 2025). Likewise, family members spoke of anticipatory anxiety, burnout, and inadequate external support; experiences that mirror those reported by carers in other high-intensity care contexts (Bell et al., 2019; Watland et al., 2023). Therefore, future research should explore the specific support needs of carers and clinicians working with menopausal women experiencing suicidality, and evaluate the effectiveness of interventions such as peer networks, psychoeducation, or reflective practice groups in reducing secondary distress.

Importantly, this thesis has shown that suicidality may emerge in the absence of formal psychiatric diagnosis and escalate quickly during hormonal fluctuations. However, rating scales are limited, and further clinical research is needed to explore this finding and further examine the relationship with mood disorder. These findings are consistent with research on reproductive mood disorders, such as PMDD and PPD, which similarly highlight the role of hormonal sensitivity, not absolute hormone levels, as a trigger for affective and suicidal symptoms (Block et al., 2005; Islas-Preciado et al., 2024; Soares & Zitek, 2008). Some scholars argue that the perimenopausal brain undergoes neurochemical changes that may increase vulnerability to mood dysregulation and emotional instability, suggesting that midlife suicidality may be more hormonally mediated than previously assumed (Gordon et al., 2015; Zsido et al., 2017), therefore future longitudinal studies are essential to capture this temporal variability, using repeated measures across the perimenopausal period. These should aim to map fluctuations in hormones alongside changes in mood, suicidality, identity, and cognitive function, in order to identify individual risk trajectories and potential biomarkers of hormonal sensitivity. Prior work has demonstrated that rapid hormonal shifts are more strongly associated with mood symptoms than steady low levels (Musial et al., 2021; Williams, 2023; Willi et al., 2021), but such findings have yet to be applied systematically to suicidality research. In particular, momentary assessment tools, hormonal diaries, and wearable technology could offer more nuanced insights into how distress emerges and resolves across hormonal cycles, as such approaches have proven feasible and insightful in other hormonally mediated conditions (Alzueta et al.,2021; Beddig et al., 2020; Ehlers et al., 2016; Krohn et al., 2021).

Beyond hormonal and psychological variables, this thesis also points to the need for greater investigation into lifestyle and behavioural factors, particularly alcohol use, as a potential mediator or moderator of menopausal suicidality. Although the quantitative study could not fully explore alcohol use due to limitations in clinical record detail, prior literature suggests that many midlife women may use alcohol as a coping mechanism for insomnia, mood instability, or emotional overwhelm during perimenopause (Banaszkiewicz et al., 2015; Kersey et al., 2021; Reisel et al., 2024). At the same time, alcohol may biologically exacerbate mood dysregulation and interact negatively with

hormone therapy, increasing suicide risk (Campillo 2005; Wiener et al., 2017). Similarly, smoking and BMI emerged as significant covariates in the quantitative analysis, aligning with existing evidence that these factors are linked to poorer menopausal outcomes via inflammatory, endocrine, and psychosocial pathways (Palla et al., 2020; Windham et al., 2005). Future research should therefore explore how lifestyle factors interact with hormonal sensitivity and psychosocial stressors to shape trajectories of distress, and whether interventions targeting behaviour change, such as alcohol reduction or smoking cessation, may contribute protective effects for mental health and suicidality during menopause.

Finally, more implementation research is needed to investigate how existing suicide prevention frameworks and models could be adapted to account for hormonal life stages. While the current thesis recommends integration of menopause-informed risk assessment into mental health and primary care settings, questions remain about how this could be operationalised at scale. Co-produced research involving midlife women with lived experience, alongside GPs, endocrinologists, and mental health professionals, will be essential to ensure that future interventions are not only clinically effective but also acceptable, accessible, and inclusive. Such participatory approaches have already demonstrated success across both suicide prevention initiatives and broader mental health interventions, where they have been shown to improve the relevance, uptake, and long-term sustainability of services by ensuring that programmes are grounded in lived realities and user priorities (Hawke et al., 2024; Krysinska et al., 2025; Lewis & Foye, 2021).

In addition to clinical and psychosocial priorities, future research should incorporate economic evaluations to assess both the cost burden and cost-effectiveness of interventions targeting menopausal suicidality. The findings of this thesis suggest that untreated psychological distress during menopause carries significant indirect costs, impacting not only the health and productivity of affected women, but also placing emotional and economic strain on unpaid carers and overstretched healthcare professionals. Prior research has shown that menopause-related symptoms, particularly when accompanied by depression, are associated with substantial economic burden: in

one American study, women experiencing depression during menopause incurred $3,066 more in indirect costs and $1,075 more in direct healthcare costs annually than their non-depressed counterparts (DiBonaventura et al., 2012). Similarly, untreated menopausal vasomotor symptoms were associated with $1,346 higher direct and $770 higher indirect annual costs per woman in the US., largely due to increased outpatient visits and absenteeism (Sarrell et al., 2015). The economic impacts also extend to the workplace as severe menopausal symptoms have been linked to higher rates of absenteeism, early retirement, and job turnover, with broad implications for both employers and health systems (Safwan et al., 2024; Whiteley et al., 2013). In parallel, the economic value of unpaid caregiving – estimated at £162 billion annually in England and Wales – further underscores the need to support carers who often absorb the hidden costs of emotional and practical labour (University of Sheffield, 2023). Although the present work was not designed to calculate economic outcomes, future studies should include structured cost analyses to assess service use, loss of earnings, carer burden, long-term outcomes and broader societal costs associated with delayed or inadequate treatment. There is also a growing evidence base for cost-effective menopause interventions. For instance, structured physical activity programs have been shown to yield modest gains in quality-adjusted life years (QALYs) in menopausal women at relatively low cost (e.g. ~£1,413 per QALY, well below the NICE (2013, 2025) threshold of £20,000-£30,000 per QALY), demonstrating the feasibility of scalable, non-pharmacological approaches (Goranitis et al., 2017; Kolu et al., 2015). Future trials should evaluate the cost-effectiveness of both hormonal and non-hormonal interventions, and of integrated care models tailored to the psychological and physiological complexities of menopause-related suicidality. Furthermore, economic modelling and formal cost-effectiveness trials will also be essential to inform policy decisions around the funding and scaling of integrated menopause and mental health services, including the provision of multi-hormone HRT and specialist support pathways. Demonstrating value for money will be critical for securing investment and ensuring the long-term sustainability of menopause-informed suicide prevention strategies.

Collectively, this thesis opens a range of important research directions that can advance both the scientific understanding and practical response to suicidality in midlife women.

Future work must continue to prioritise lived experience, bridge gaps between reproductive and mental healthcare, and work toward equitable, menopause-informed suicide prevention strategies.

Dissemination and Impact

Translating research into practice is a well-recognised challenge, particularly in areas where clinical recognition remains limited and stigma persists (Abu-Odah et al., 2022). This is especially evident in the field of women's health, where structural neglect continues to undermine service development and resource allocation (Hanbury et al., 2012). As discussed earlier in this chapter, the government's recent decision to withdraw central funding for Women's Health Hubs (NHS England, 2025), despite strong evidence of their efficacy (Barts Health Trust, 2024; Department of Health & Social Care, 2024; Royal College of Obstetricians & Gynaecologists, 2024), illustrates the fragility of progress in this area and the ongoing difficulty in sustaining meaningful, gender-informed innovation within the healthcare system. This thesis sought not only to contribute to academic knowledge on menopausal suicidality but also to influence clinical practice, healthcare education, and policy frameworks in tangible ways. Recognising the risks of a widening implementation gap – where research findings fail to impact frontline services or public understanding – dissemination was embedded throughout the research process.

To support clinical relevance, preliminary findings were shared with clinicians at the participating menopause clinic, as well as with GPs, mental health professionals, and those engaged in women's health through Public and Patient Involvement (PPI). These feedback loops enabled findings to be presented in a format that was meaningful to service providers, highlighting how suicidality during menopause may present atypically and the need for greater hormonal literacy across healthcare professions. This engagement has contributed to internal discussions about training and screening pathways within the clinic and raised awareness about suicide risk as a potential hormonal and social phenomenon, not merely a psychiatric one.

As part of a commitment to maximising the real-world relevance of the research, findings from this thesis have been disseminated across academic, clinical, and public forums throughout the research process in the UK and Europe. Presentations have been delivered at a range of national and international conferences, including the Newson Health Conference (London), the Suicide and Self-Harm Research North West event (Liverpool), the European Symposium on Suicide and Suicidal Behaviour (Rome), the International Association for Suicide Prevention (IASP) World Congress (Vienna) and the Royal College of Psychiatrists Conference (Edinburgh). Additional posters and oral presentations were shared at the Early/Mid-Career Researchers Forum (Glasgow) and internal events such as the Liverpool John Moores University (LJMU) Postgraduate Researchers Day and the LJMU Faculty of Health Conference. These opportunities enabled knowledge exchange with clinicians, researchers, and lived experience advocates, helping to ensure the work remained responsive to practice-based needs while contributing to wider academic and policy conversations.

Future impact activities may include the development of menopause-informed risk assessment resources and training materials for clinicians, as well as further collaborative work with lived experience advocates to help ensure that the voices of those most affected remain central to research and service design. The ultimate aim of this work is not only to inform but to transform, making menopausal suicidality visible, understood, and systematically addressed within mental health care, education, and policy.

Conclusion

This thesis makes a significant and original contribution to the understanding of suicidality during the menopausal transition, a critical yet under-recognised area within suicidology, mental health care, and women's health policy. By integrating evidence from a systematic review, two qualitative studies, and a quantitative clinical cohort study, it offers a comprehensive, multidimensional examination of how hormonal, psychological, and sociocultural factors intersect to influence suicidal risk in midlife women. It also foregrounds the perspectives of overlooked groups – caregivers and clinicians – whose

experiences emphasise the need for more compassionate, informed, and integrated care systems.

The findings of this thesis carry important implications for clinical practice, including the need for menopause-informed suicide risk assessments (including the mental health implications of different treatment regimens), multimodal treatment pathways, and tailored clinician training. It also highlights pressing gaps in national and regional health policy, where midlife women remain invisible in suicide prevention frameworks and underrepresented in service design. At the same time, this work challenges current educational practices and public discourse, calling for greater inclusion of menopause and women's mental health in both curricula and media. Crucially, this thesis identifies multiple directions for future research, including the development of stage-sensitive psychometric tools, longitudinal studies on hormonal fluctuations and suicidality, and greater attention to lifestyle factors, diverse populations, and routes of HRT administration. It also calls for expanded participatory research and implementation science to support real-world translation of evidence into practice.

In sum, the thesis provides a timely and necessary intervention in the ongoing marginalisation of menopausal mental health; a neglect deeply entwined with patriarchal logics that have historically rendered women's suffering invisible. As Womersley (2021) argues, the historic and systematic exclusion of women from clinical trials "on the basis of their hormones" was not a neutral oversight, but a deliberate erasure with far-reaching consequences that continue to shape diagnostic blind spots and treatment gaps today. By exposing how menopausal suicidality is routinely misrecognised, misclassified, or dismissed, this thesis calls for structural, systemic, and epistemic reform, including a reconfiguration of healthcare, policy, and knowledge production that centres women's embodied realities, rather than treating them as anomalies or afterthoughts. In doing so, it lays the foundation for a more just, inclusive, and life-course-informed approach to suicide prevention, one in which the psychological distress of midlife women is not pathologised or silenced, but recognised, validated, and met with meaningful support. Taken together, these findings present not only an opportunity to reduce preventable suffering and save lives, but also to contribute to a

necessary reframing of women's health; one that places care, equity, and dignity at the centre of healthcare policy and practice.

Chapter 8: References (Introduction, Methodology and Discussion)

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Appendix

1. PPI Advert

Public Advisory Group members invited for research

Experts-by-experience invited to help with PhD research on menopause and mental health, specifically suicidality.

The primary objectives are to develop a method to identify peri-menopausal or menopausal people at suicide risk and to identify appropriate and beneficial treatments for said individuals. We hope this research will help how those going through menopause are treated clinically and hope it will support funding into further menopause research in the future.

I am setting up a public advisory group of individuals interested in this area who might be able to advise me on this project to ensure that this research has real-life implications. It is envisioned that this group will meet 4 times a year to discuss the project and share information. I would very much value the input of people who have had direct experience in this area and have struggled with mental health issues caused by menopause.

If this sounds like something you would like to partake in, or if you have any questions or want to discuss this further, please don't hesitate to email me at:

o.j.hendriks@2022.ljmu.ac.uk

Those who participate will be reimbursed £15 per hour in Love2Shop vouchers that are accepted at over 20,000 UK stores.

Thank you!

2. PPI Terms of Reference

Public Advisory Group Terms of Reference

This document establishes the purpose and responsibilities of the Project Public Advisory Group regarding the PhD research conducted at Liverpool John Moores University titled 'Predictors of suicide risk amongst peri-menopausal women utilising a specialised menopause and wellbeing clinic; a mixed methods study'.

This research is being conducted by PhD Student Olivia Hendriks (o.j.hendriks@2022.ljmu.ac.uk) and supervisors Dr Pooja Saini (Director of Studies) and Dr Jason McIntyre.

PURPOSE

The aim of the Public Advisory Group is to provide expertise, guidance, and leadership to the running of the PhD.

The Objectives of the Steering Group are to:

- Advise on the set-up and management of the study,
- Ensure that the protocol is followed,
- Explore perceived barriers to the research.

MEMBERSHIP

The Project Public Advisory Group is voluntary and will consist of:

- Experts-by-experience
- General Clinicians

MEETINGS AND PROCEDURES

- The period of membership will be for three years and will then be reviewed.
- The group will report back to the Menopause and Suicide PhD Steering group.
- The terms of reference will be reviewed on an annual basis.
- The Steering Group will meet virtually using Teams (or other video conferencing method).
- Meetings will be held on a quarterly basis in the first instance. The regularity will be reviewed on an ongoing basis. Olivia Hendriks and Dr Pooja Saini will Chair the meetings which will be minuted by Olivia Hendriks. Minutes will be circulated within 2 weeks of the meeting. Papers for the meetings will be circulated via email at least 3 days before the meeting.
- Topics for the agenda will be agreed in advance by the Chair. Items to be considered for the agenda should be agreed upon at least 5 days in advance of the meeting.
- Up to two additional non-members may attend the meeting upon invitation from Steering Group members and agreement by the chair only.
- It is required that members attend two out of four of the meetings per year.
- Information and documents will be shared by email. It is not anticipated that the group will access confidential information.

3. Interview Participant Consent Form

PARTICIPANT CONSENT FORM

Study title: Predictors of suicide risk amongst peri-menopausal women utilising a specialised menopause and wellbeing clinic; a mixed methods study

Research Ethics Committee Reference Number: *22/PSY/080*

Principal Investigator: Olivia Hendriks
LJMU postgraduate research student
LJMU Email address: o.j.hendriks@2022.ljmu.ac.uk
LJMU School/Faculty: School of Psychology, Faculty of Health
LJMU Central telephone number: 0151 231 2121
Supervisor Name: Dr Pooja Saini
LJMU Email address: p.saini@ljmu.ac.uk

If you are happy to participate, please complete and sign the consent form below

		Please initial
1.	I confirm that I have read the information sheet dated 02/09/2022 (version 1) for the above study, or it has been read to me. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	

2.	I understand what taking part in the study involves		
3.	I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions I can withdraw from the study at any time, without giving a reason and without penalty or my legal rights being affected.		
4.	I have been advised about potential risks associated with taking part in this study and have taken these into consideration before consenting to participate		
5.	To the best of my knowledge, I do not meet any of the exclusion criteria outlined in the information sheet for this research. If this changes at a later date during study participation, I agree to notify the researchers immediately.		
6.	I agree that audio recordings can be taken of me during the study. (Participants are free at any time to decline to be audio recorded whilst continuing to participate in the study)	YES	NO
7.	I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.		
8.	I understand that my information may be subject to review by responsible individuals from Liverpool John Moores University for monitoring and audit purposes		
9.	I understand that personal data will remain confidential and that all efforts will be made to ensure I cannot be identified in reports or any further outputs		
10.	I understand that there may be instances where information is revealed which means that the investigators will be obliged to break confidentiality and this has been explained in more detail in the information sheet.		
11.	I agree to take part in this study		

Data Protection. Any personal information we collect and use to conduct this study will be processed in accordance with data protection law as explained in the Participant Information Sheet and the Privacy Notice for Research Participants.

Name of Participant Date Signature

For participants unable to sign their name, mark the box instead of signing ☐

I have witnessed the accurate reading of the consent form with the potential participant and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely

Name of Investigator Olivia Hendriks Date 02/09/2022 Signature O HENDRIKS

4. Participant Information Sheet

PARTICIPANT INFORMATION SHEET

Research Ethics Committee Reference Number: *22/PSY/080*

Title of Study: Predictors of suicide risk amongst peri-menopausal women utilising a specialised menopause and wellbeing clinic; a mixed methods study

You are being invited to take part in a research study. You do not have to take part if you do not want to. Please read this information, which will help you decide.

1. **What is the purpose of the study?**

   The primary objectives of this study are to develop a method to identify peri-menopausal or menopausal women at suicide risk from a longitudinal data set, and to identify treatment pathways for peri-menopausal or menopausal women at suicide risk.

2. **Why have I been invited to participate?**

   You have been invited because you are a staff member at Newson Health Menopause and Wellbeing Clinic/member of the public who has supported someone accessing the service that has reported being suicidal or is someone who has felt suicidal during menopause.

3. **Do I have to take part?**

No. You can ask questions about the research before deciding whether to take part. If you do not want to take part that is OK. If you do decide to take part, we will ask you to sign a consent form and will give you a copy for you to keep.

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have that has been anonymised and are now unable to remove. You may withdraw from the study by contacting myself or my supervisor.

4. **What will happen to me if I take part?**

   You will be interviewed by myself for around 30-45 minutes and asked in general terms to discuss your experiences of treating service users. The interview will include questions around menopause and low mood symptoms, including suicide and suicidal thoughts. This may be considered sensitive to some, however the interview may be stopped at any point if required. Breaks will also be offered if needed.

5. **Will I be photographed or video/audio recorded and how will the recorded media be used?**

   You are free to decline to be audio recorded. You should be comfortable with the recording process and you are free to stop the recording at any time whilst continuing to participate in the study. The audio recordings of your activities made during this study will be used only for analysis. No other use will be made of them without your written permission.

6. **Are there any potential risks in taking part?**

   As potentially sensitive topics will be discussed, there may be a risk of potential discomfort or distress amongst participants. These risks will be minimised by checking whether you feel comfortable talking about these topics, asking to disclose when you feel discomfort and offering to end or have a break from the interview at any point.

Questions included in this study require participants to reflect on their own, service users' or loved ones' wellbeing. If you feel worried or in low mood because of this we would like to point out that there are several sources of advice or help which are free and readily available to you and which may provide useful. Specifically, these include:

NHS Direct: 111
The Samaritans free 24/7 helpline: 116 123
Saneline: **0300 304 7000** (4pm to 10pm every day)
SHOUT Crisis text service: text 85258 (free from all major mobile networks 24/7)

7. Are there any benefits in taking part?

The potential or hoped for benefits of the study for the wider society are informing the development of theory-driven suicide prevention management frameworks for individuals engaging with Newson Health Menopause and Wellbeing Centre and will be highly relevant to health services locally and nationally including primary care and the translation of research into clinical practice.

8. What will happen to information/data provided?

The information you provide as part of the study is the **study data**. Any study data from which you can be identified (e.g. from identifiers such as your name, date of birth, audio recording etc.), is known as **personal data.** Your participation in this study will involve the collection/use of personal data. The study data collected/used will include more sensitive categories of personal data (special category personal data) such as your race; ethnic origin; politics; religion; health; sex life; or sexual orientation.

We will keep personal data safe and secure. People who do not need to know who you are will not be able to see your name or contact details. The data collected is confidential and no names will be shared with employer. The personal data collected will include:

- A record of consent (which will include your name)

- Study data. We will use a code/pseudonym so that you cannot be directly identified from the data. Study data will include audio recordings (which include your voice). Interview recordings will be deleted once the interview transcript has been verified as accurate and an evaluation has determined that it has no further research value.

The Investigator will keep confidential anything they learn or observe related to illegal activity unless related to the abuse of children or vulnerable adults, money laundering or acts of terrorism. The investigator has a professional obligation to inform relevant agencies if they learn about these. In certain exceptional circumstances where you or others may be at significant risk of harm, the investigator may need to report this to an appropriate authority. This would usually be discussed with you first. Examples of those exceptional circumstances when confidential information may have to be disclosed are:

- The investigator believes you are at serious risk of harm, either from yourself or others
- The investigator suspects a child may be at risk of harm
- You pose a serious risk of harm to, or threaten or abuse others
- As a statutory requirement e.g. reporting certain infectious diseases
- Under a court order requiring the University to divulge information
- We are passed information relating to an act of terrorism

9. What if we find something unexpected?

The investigator will not suggest the presence or absence of diagnosable conditions. The study is not a clinical or personal assessment and the investigators are not appropriately qualified to provide meaningful individual assessments. If the investigator suspects they have found something unexpected, they will consult with senior researchers and may advise you to seek appropriate advice if they think that could help you gain access to services that might be of help.

10. Who is organising and who is funding/commissioning the study?

This study is organised by Liverpool John Moores University and funded by Newson Health Research and Education Limited.

11. Whom do I contact if I have a concern about the study or I wish to complain?

If you have a concern about any aspect of this study, please contact Olivia Hendriks or Dr Pooja Saini and we will do our best to answer your query. You should expect a reply within 10 working days. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at Liverpool John Moores University who will seek to resolve the matter as soon as possible:

Chair, Liverpool John Moores University Research Ethics Committee; Email: FullReviewUREC@ljmu.ac.uk; Tel: 0151 231 2121; Research Innovation Services, Liverpool John Moores University, Exchange Station, Liverpool L2 2QP

12. Data Protection

Liverpool John Moores University is the data controller with respect to your personal data. Information about your rights with respect to your personal data is available from:

- https://www.ljmu.ac.uk/legal/privacy-and-cookies/external-stakeholders-privacy-policy/research-participants-privacy-notice
- by asking one of the study team or contacting us using the information below

13. Contact details:

Principal Investigator: Olivia Hendriks

LJMU postgraduate research student

LJMU Email address: o.j.hendriks@2022.ljmu.ac.uk

LJMU School/faculty: School of Psychology, Faculty of Health

LJMU Central telephone number: 0151 231 2121

Supervisor Name: Dr Pooja Saini

LJMU Email address: p.saini@ljmu.ac.uk

Please note that you may only participate in this survey if you are 18 years of age or over.

☐ I certify that I am 18 years of age or over

If you have read the information above and agree to participate with the understanding that the data (including any personal data) you submit will be processed accordingly, please tick the box below to start.

☐ Yes, I agree to take part

5. Interview Schedules

Interview Schedule for Newson Health Staff

You have been contacted to take part in this study as you are staff member at Newson Health Menopause and Wellbeing Centre and have supported service users who have been classed as 'vulnerable', that is those who have disclosed suicidal or self-harm related thoughts. Thank you for agreeing to take part in this interview.

You are going to be asked a series of questions about service users' health and experience at Newson Health. Some of the topics discussed regarding mental health may be potentially sensitive, however you are free to stop the interview or have a break at any point. You do not have to answer any questions you don't feel comfortableanswering, and you are free to completely withdraw from the study at any time. I'll also be recording this interview for analysis, but it will be stored securely.

1. Could you tell me about vulnerable service users experience of peri-menopause/menopause?
2. Could you tell me about their experience of Newson Health Menopause and Wellbeing Centre?
3. More specifically, could you tell me about your experience helping them manage their suicidal or self-harm related thoughts at Newson Health?
4. How do these thoughts generally compare now to when they first attended Newson Health?
5. What things do you think Newson Health could do better to support these individuals?
6. Is there anything else you would like to discuss?

Interview Schedule for Service Users

You have been contacted to take part in this study as you are a service user of Newson Health Menopause and Wellbeing Centre and have disclosed having suicidal or self-harm related thoughts. Thank you for agreeing to take part in this interview.

You are going to be asked a series of questions about your health and your experience at Newson Health. Some of the topics discussed regarding mental health may be potentially sensitive, however you are free to stop the interview or have a break at any point. You do not have to answer any questions you don't feel comfortable answering, and you are free to completely withdraw from the study at any time.

1. Could you tell me about your experience of peri-menopause/menopause?
2. Could you tell me about your experience of Newson Health Menopause and Wellbeing Centre?
3. More specifically, could you tell me about your experience of how staff helped you in managing your suicidal or self-harm related thoughts at Newson Health? Is there anything you think could have been done better to support you?
4. How do these thoughts compare now to when you first attended Newson Health?
5. Have you attended or reached out anywhere else for your suicidal thoughts?
6. Is there anything else you would like to discuss?

Interview Schedule for Loved Ones of Service Users

You have been contacted to take part in this study as you are a loved one of a service user of Newson Health Menopause and Wellbeing Centre who has disclosed having suicidal or self-harm related thoughts. Thank you for agreeing to take part in this interview.

You are going to be asked a series of questions about your loved ones' health and experience at Newson Health. Some of the topics discussed regarding mental health may be potentially sensitive, however you are free to stop the interview or have a break at any point. You do not have to answer any questions you don't feel comfortable answering, and you are free to completely withdraw from the study at any time.

1. Could you tell me about your loved ones' experience of peri-menopause/menopause?
2. Could you tell me about their experience of Newson Health Menopause and Wellbeing Centre?
3. More specifically, could you tell me about their experience of how staff helped them in managing their suicidal or self-harm related thoughts at Newson Health? Is there anything else that could've been done better to support them?
4. How do these thoughts compare now to when they first attended Newson Health?
5. Have they attended or reached out anywhere else for their suicidal thoughts?
6. Is there anything else you would like to discuss?

6. Bespoke Mood and Menopause Questionnaire (MMQ)

The following items were extracted from routinely collected clinical data as part of the Newson Health Menopause and Wellbeing Centre outcome monitoring system. Measures included bespoke Menopause and Mental Health Questionnaire (MMQ) items capturing lifestyle and hormonal variables, the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), and the Menopausal Depression Scale (MENO-D; Kulkarni et al., 2018). All items were rated using categorical or Likert-type response options as specified below.

Bespoke Menopause and Mental Health Questionnaire (MMQ) – Full Item List

Item Label (as in dataset)	Description / Question Text	Response Options
Patient ID	Unique anonymous participant identifier	Numeric code
Age	Participant age in years	Numeric
Ethnicity	Self-identified ethnicity	Open text
How much do you weigh (kg)?	Weight	Numeric (kg)
How tall are you (m)?	Height	Numeric (m)
BMI	Body Mass Index (calculated)	Numeric (kg/m^2)
Do you drink alcohol?		Yes / No
Do you smoke?		Yes / No
Are you still having periods?		Yes / No
*Diagnosis	Self-reported diagnosis (e.g., perimenopause, menopause, premature menopause)	Categorical
Are you currently taking anti-depressants?		Yes / No

Please list any other medicines you are currently taking including dosages.		Open text
Are you on HRT?		Yes / No
Please list your current HRT including dosages and date of Mirena coil insertion, if applicable.		Open text
Have you ever suffered from? Depression		Yes / No
Have you ever suffered from? PMS		Yes / No
Have you ever suffered from? PMDD		Yes / No
Have you ever suffered from? Severe mental illness		Yes / No
Have you ever suffered from? PND		Yes / No
Oestrogen dose 1	Prescribed oestrogen dose (entry 1)	Numeric / dosage noted
Oestrogen dose 2	Prescribed oestrogen dose (entry 2)	Numeric / dosage noted
Oestrogen dose 3	Prescribed oestrogen dose (entry 3)	Numeric / dosage noted
Date of MMQ 1–5	Dates corresponding to data entry timepoints 1–5	Date (dd/mm/yyyy)
Difference (in months) between MMQs	Calculated time differences between MMQ timepoints	Numeric (months)

Patient Health Questionnaire-9 (PHQ-9)

Response options for all PHQ-9 items: 0 = Not at all; 1 = Several days; 2 = More than half the days; 3 = Nearly every day.

No.	Item	Question Text
1	PHQ-9 Q1	Over the last two weeks, how often have you been bothered by little interest or pleasure in doing things?
2	PHQ-9 Q2	Over the last two weeks, how often have you been bothered by feeling down, depressed, or hopeless?
3	PHQ-9 Q3	Over the last two weeks, how often have you been bothered by trouble falling or staying asleep, or sleeping too much?
4	PHQ-9 Q4	Over the last two weeks, how often have you been bothered by feeling tired or having little energy?
5	PHQ-9 Q5	Over the last two weeks, how often have you been bothered by poor appetite or overeating?
6	PHQ-9 Q6	Over the last two weeks, how often have you been bothered by feeling bad about yourself—or that you are a failure or have let

		yourself or your family down?
7	PHQ-9 Q7	Over the last two weeks, how often have you been bothered by trouble concentrating on things, such as reading the newspaper or watching television?
8	PHQ-9 Q8	Over the last two weeks, how often have you been bothered by moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving a lot more than usual?
9	PHQ-9 Q9	Over the last two weeks, how often have you been bothered by thoughts that you would be better off dead, or of hurting yourself in some way?

Menopausal Depression Scale (MENO-D)

Response options for all MENO-D items: 0 = Not at all; 1 = Some days; 2 = Most days; 3 = Almost every day.

No.	Item	Question Text

1	MENO-D Q1	Over the last two weeks have you noticed reduced energy levels?
2	MENO-D Q2	Over the last two weeks have you experienced increased paranoid thinking?
3	MENO-D Q3	Over the last two weeks have you felt more irritable?
4	MENO-D Q4	Over the last two weeks has your self-esteem been lowered?
5	MENO-D Q5	Over the last two weeks have you withdrawn socially?
6	MENO-D Q6	Over the last two weeks have you experienced heightened levels of anxiety?
7	MENO-D Q7	Over the last two weeks have you experienced physical symptoms?
8	MENO-D Q8	Over the last two weeks have you experienced sleep disturbance?
9	MENO-D Q9	Have you gained weight (in comparison to pre-menopause weight)?

10	MENO-D Q10	Over the past two weeks have you experienced a decreased libido?
11	MENO-D Q11	Over the last two weeks have you noticed any memory-related difficulties?
12	MENO-D Q12	Over the past two weeks have you experienced problems concentrating?