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Living with a multimorbidity. A qualitative study on the personal perspectives of individuals with type 2 diabetes and cardiovascular disease

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ABSTRACT
Type 2 diabetes (T2D) and cardiovascular disease (CVD) frequently co-exist as multimorbid conditions, creating challenges for individuals in managing their health and maintaining quality of life. However, research exploring the complexities of living with these conditions are scarce. This study addresses this gap by qualitatively exploring the experiences and perceptions of affected individuals. Thirty-two participants with T2D and atherosclerotic CVD were recruited, and raw data were analysed using Reflexive Thematic Analysis. Three core themes and six sub-themes were generated: first, The Disconnected Conditions; second, Lack of Integrated Care; and third, Navigating and Adapting to Multimorbidity. Participants highlighted a lack of understanding of the bidirectional relationship between the conditions and believed CVD to be more threatening primarily due to the visibility of symptoms. Participants also shared that they faced varying levels of emotional distress related to their T2D and CVD, with socioeconomic factors impacting their ability to manage their multimorbidity. This challenge was further exacerbated by what they perceived as poorly integrated care from healthcare professionals. This study highlights the importance of exploring patient perspectives to inform more of a cohesive care model that moves away from singular disease-based management for those living with T2D and CVD as a multimorbidity.

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Cardiovascular disease; type 2 diabetes; multimorbidity; knowledge gap; understanding the complexity; Reflexive Thematic Analysis

Introduction

The World Health Organisation [WHO] (2021) states that Cardiovascular Disease (CVD), the umbrella term describing a diverse range of conditions that affect the heart, blood

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vessels, or both, is the leading cause of mortality worldwide. CVD is also one of the major causes of morbidity among people with Type-2-Diabetes (T2D) (Galicia-Garcia et al., 2020). T2D is a metabolic condition that primarily arises from insufficient insulin secretion, which progressively leads to dangerously elevated blood glucose, known as hyperglycaemia (Goyal et al., 2023). Insulin resistance coupled with hyperglycaemia, amongst other elements, can alter circulating factors and trigger significant vascular inflammation increasing the risk of major CVDs such as chronic (Mak et al., 2022) and acute (Babes et al., 2022) coronary syndromes. Chronic coronary syndromes (CCS) describe the clinical presentations that arise due to structural and functional alterations related to chronic diseases of the coronary arteries (such as coronary artery disease) and microcirculation (Vrints et al., 2024). These changes can result in restricted blood flow (ischaemia) and may manifest as chest discomfort or stable angina. Although quite stable, CCS can be progressive and lead to acute coronary syndromes (ACS) at any time (Vrints et al., 2024). ACS refers to a group of conditions that are often caused by a sudden blockage or reduction in blood flow, leading individuals to present quick changes in clinical symptoms and eventually, many receive a diagnosis of acute myocardial infarction (AMI) or unstable angina (Byrne et al., 2023).

Epidemiological studies indicate adults with T2D have a 1.5 to 2-fold higher risk of developing heart and circulatory diseases compared to those without T2D (Pearson-Stuttard et al., 2022; Rawshani et al., 2017), meaning the conditions can frequently co-exist. The co-existence of two or more conditions is defined as a multimorbidity (National Institute for Health and Care Research [NIHR], 2021) and can often result in many issues for individuals and healthcare systems as those with multimorbidity are significantly higher users of inpatient care compared to those with a singular disease (Rayman et al., 2022) and many struggle with daily tasks, face unemployment, endure social isolation and deal with financial difficulties (Stafford et al., 2018). Research on T2D and CVD has predominantly focused on the epidemiology of the multimorbidity. For example, a global prospective longitudinal study conducted across 45 countries from 2009 to 2010, with annual follow-ups over 5 years (Mak et al., 2022), found that 29% of individuals with CCS had diabetes, which is significantly higher than the general population's estimated prevalence of 8–10%. Moreover, individuals with T2D have a similar risk for cardiac events as those with a prior myocardial Infarction (MI), as well as having a reoccurrence risk higher than 40% (Avogaro et al., 2019) and due to the high prevalence of ACS diagnoses such as AMI in individuals with T2D, they are expected to lose 30 quality-adjusted life years compared to those without T2D (Narayan et al., 2003). Research also suggests prediabetes is associated with an increased risk of CCS and all-cause mortality (Cai et al., 2020; Huang et al., 2016), emphasising the potential early onset of multimorbidity in those with T2D. Despite the high prevalence of CVDs in those with T2D and clinical guidelines from the National Institute for Health and Care Excellence (National Institute for Health and Care Excellence [NICE], 2016) emphasising the importance of providing tailored care for individuals with multiple conditions, there is limited evidence on how healthcare professionals (HCPs) communicate the link between T2D and CVD, as well as how perceive multimorbidity.

In the United Kingdom (UK), community services play a pivotal role in managing long-term conditions, taking up to 50% of all doctor appointments (NHS England, 2019). Nonetheless, individuals are also encouraged to follow a series of self-management strategies to enhance clinical and quality of life-related outcomes. Self-management practices for T2D (Tomky et al., 2008) and CVD (Huynh-Hohnbaum et al., 2015) are similar, with individuals ideally maintaining a healthy lifestyle encompassed of a good quality diet, regular exercise and agreeing to and adhering to a prescribed medication regimen. Studies indicate intensive lifestyle interventions can yield positive outcomes. For instance, Salas-Salvadó et al. (2019) found that individuals living with T2D, aged 55–75 years old, improved glycaemic control and reduced CVD risk factors by following an energy-controlled Mediterranean diet, as demonstrated through 12-month follow-up. Similarly, other investigations have echoed these benefits and highlight how lifestyle interventions encompassing diet, exercise and behaviour change techniques can reduce insulin resistance (Lakka et al., 2023), improve body mass index, blood pressure and participants' mobility and sleep apnoea (Johnston et al., 2014). However, despite these promising results, sustaining significant lifestyle changes considered far from an individual's norm can be challenging (Schmidt et al., 2020), and they may not reflect the complexities of real-world T2D and CVD management or capture the lived experiences of individuals managing both conditions daily.

Chowdhury et al. (2023) conducted a systematic review on the global and regional prevalence of multimorbidity in the adult population within community settings, highlighting its increasing prevalence over the past two decades. Moreover, research suggests many individuals living with two or more conditions experience extensive physical limitations and psychological distress that affects their daily lives (Sand et al., 2021). Existing quantitative literature has highlighted the association between living with T2D and depression and the effects this has on CVD risk. For example, Zareini et al. (2024) found that T2D is associated with a higher rate of depression across CVDs, including MI's and CCS's, with this association persisting over time. Additionally, a meta-analysis of 17 studies, including more than 1 million participants, found that depression was strongly associated with CAD and forms of ACS, such as unstable angina or AMI (Inoue et al., 2020). However, despite these findings showing strong associations, research exploring qualitative accounts of how individuals with T2D and CVD cope and how they perceive their psychological wellbeing is limited and although collaborative care between community services and mental health specialists can improve emotional outcomes for individuals with this multimorbidity (Naylor et al., 2012), little is known about how they manage their psychological health or the emotional support they receive from HCPs, especially in community services.

The prevalence of diabetes (all types) in the UK is expected to reach 5.3 million by 2025, with T2D accounting for 90% of cases (Diabetes.co.uk, 2023). This trend and the associated CVD burden highlights the urgent need to address the complexities of supporting people in managing their conditions. Although some studies have focused on the perception of CVD risk in T2D patients (Jutterström et al., 2024), most research has quantitatively examined the global prevalence of this multimorbidity or focused on patient's thoughts and feelings towards T2D and CVD as singular conditions. There is a lack of qualitative research exploring how individuals living with both conditions understand, manage and cope with their multimorbidity. This gap leaves the healthcare experiences of these patients poorly understood. Gaining insights into their perspectives is crucial for advancing knowledge in this area. Thus, to our knowledge, this study is the one of the first to explore how individuals living with T2D and CVD as a multimorbidity perceive, experience and manage their conditions within the context of healthcare and daily life.

Methods

Design

This study adopted a qualitative approach, using Braun and Clarke's Reflexive Thematic Analysis (RTA) (Braun & Clarke, 2021) to explore the lived experiences of individuals managing T2D alongside CVD. This approach aligns with a critical realist ontological position, acknowledging that while an objective reality exists (e.g. healthcare structures, biomedical diagnoses), individual experiences and meanings are socially and contextually constructed (Bhaskar, 1978). Epistemologically, the study was informed by a contextualist perspective, recognising that knowledge is co-constructed between researchers and participants within specific social, cultural and historical contexts (Madill et al., 2000). This stance rejects positivist notions of objective truth while also avoiding radical constructionism, allowing for an interpretation that is grounded in participants lived realities while acknowledging the researcher's role in shaping meaning.

Participants

Participant recruitment and criteria

The study gained ethical approval from the NHS Health Research Authority (23/NI/0054), in addition to the community service network's research lead, who also approved the study's implementation. Additionally, recruitment was supported by Diabetes UK, Diabetes.co.uk, and the British Heart Foundation (BHF), as all organisations actively support research and promote the recruitment of the study on their websites.

Potential participants were required to meet the following inclusion criteria: Over 18 years of age; diagnosed with T2D, diagnosed with one or more forms of CCS, often defined interchangeably as CAD, Coronary Heart Disease (CHD), Ischemic Heart Disease (IHD), stable Angina or/and one or more forms of ACS, which manifests itself as unstable Angina or Acute Myocardial Infarction (AMI) and speak the English language. The researchers also ensured that potential participants had the mental capacity to be interviewed by assessing their ability to understand the study's purpose procedures and the potential risks, while also confirming they could voluntarily provide informed consent without signs or impairment. Those who would be excluded from the study if they were diagnosed with another type of diabetes (e.g. Type 1/Gestational) and who were not living with any of the CVDs listed above. Although the study aimed to explore the experiences of living with both T2D and CVD, we recognise that individuals managing these conditions often have additional health concerns. To ensure that the focus remained on T2D and CVD, participants were asked whether any other health condition was currently more prominent in their daily life. Those for whom another condition took precedence were not included in the study. This selective inclusion allowed for a more targeted exploration of how individuals experience and manage T2D and CVD, while minimising the potential confounding effects of other overriding health conditions. As the eligibility requirements were very specific, suitable participants were identified using a purposive sampling technique (Campbell et al., 2020).

The researchers enlisted participants through collaborations with a network of community services operating in the Northwest of England, commonly referred to in the UK as a Primary Care Network (PCN). A clinical team member undertook the search on the patient system to identify those who met the inclusion criteria and contacted them *via* email or telephone to discuss the study. If they were happy to proceed, they contacted the researcher directly. A flyer was also placed on a notification board in six community medical centres (that make up the PCN), inviting those who meet the inclusion criteria and would be interested in taking part to contact the researcher using the contact details provided. The study was also advertised *via* a social media post on suitable social media channels such as 'X' and 'Facebook', which gave information about the study and contact details of the research team.

Participant sample

Guided by Braun and Clarke (2021), the study deliberately chose not to overemphasise the concept of data saturation and instead chose to focus on ensuring the quality and depth of the data collected. Initially, a clinical team member contacted 102 individuals at the selected PCN who met the inclusion criteria, and 30 participants agreed to join the study; however, due to dropouts, the final sample of 27, included 25 from the selected PCN and two who self-referred from the advert on one of the aforementioned forums. After careful reflection throughout the data collection process, the researchers were confident that the 27 interviews provided sufficient richness and insight for meaningful analysis. The total sample (see Table 1 for full details) included 19 males and 8 females, with a mean age of 62.3 years (ranging from 51 to 76). Participants had lived with T2D for an average of 8.5 years (ranging from 6 months to 26 years) and with CVD (measured from their first incident for those with multiple events) for an average of 6.2 years (ranging from 2 months to 22 years). Given the varied terminology used to describe acute and chronic cardiovascular syndromes, during interviews participants were encouraged to use the terms they were most familiar. The most common condition was AMI ($n = 18$), followed by CHD ($N = 6$), and then Angina ($n = 3$).

Dataset generation

The first author conducted semi-structured one-to-one interviews from June 2023 to February 2024. All participants were provided with a participant information sheet and gave written informed consent to participate in the study. Although the first author had prior employment within the PCN involved in the investigation, no one within the research team had any prior relationships with the study participants. Upon beginning the interview, participants were reminded that they were free to withdraw

Table 1. Patient demographics.

Participant	*Sex*	*Age*	*Time since T2D diagnosis*	*Type of CVD diagnosis*	*Time since CVD diagnosis*
1	M	62	15 years	AMI	3 years
2	F	76	8 years	CHD	1 years
3	M	62	7 years	Angina	2 months
4	M	61	8 years	AMI	5 years
5	F	62	3 years	AMI	15 years
6	M	61	8 years	CHD	12 years
7	M	69	13 years	AMI	10 years
8	M	65	7 months	Angina	3 years
9	M	65	2 years	AMI	13 years
10	M	61	7 years	AMI	7 years
11	F	60	5 years	AMI	2 years
12	M	68	9 years	AMI	22 years
13	M	65	6 years	AMI	10 years
14	M	60	6 months	AMI	6 months
15	M	58	10 years	CHD	5 years
16	F	53	17 years	Angina	7 years
17	F	57	3 years	CHD	4 years
18	M	54	6 years	AMI	8 months
19	F	66	26 years	AMI	11 years
20	M	62	15 years	AMI	8 years
21	M	64	20 years	AMI	5 years
22	M	61	13 years	AMI	6 years
23	M	65	7 years	AMI	15 years
24	F	68	15 years	CHD	5 years
25	M	51	11 months	AMI	11 months
26	F	62	3 years	CHD	5 months
27	M	62	6 months	AMI	6 months

before analysis took place, that any personal information would remain confidential, and that any verbatim quotes selected from their transcript would be anonymous but may be used in subsequent publications. The researcher also discussed the procedure with the participant and provided space for questions to be asked before the recording began.

Semi-structured interviews, which included open-ended questions, allowed the participants to give a detailed recognition of their experiences without the possibility of the researcher making assumptions that could lead the participant towards a particular answer. All interviews were recorded using an encrypted audio recorder, and participants were thanked for their time once the interview concluded (see supplementary file A for the full interview schedule). While the interviews were structured into three broad sections (personal background and diagnosis, coping with multimorbidity, and experiences with NHS care) the guide only offered a broad structure for data collection and the themes were generated independently based on participants' account.

The recordings were transcribed verbatim to create raw data files for each interview. The mean duration of the interviews was 38 min and although the interview duration ranged considerably (10–68 min) with a few of the interviews being shorter in duration than the rest ($n = 3$ of 10–15 min); quality in qualitative work is a set of relationships threated through an entire research process between the research and the research concern (Timonen et al., 2024). Therefore, during analysis and discussions between the authors, it was deemed that the contributions provided by these shorter interviews were relevant and meaningful, and added value to the data set.

Data analysis procedures

Analysis followed Braun and Clarke's six-phase RTA approach (2021), which emphasises active engagement with data rather than passive extraction of themes. The process began with the author (JB) listening to audio files and reading transcripts to become familiar with the data. Then in alignment with a reflexive approach, coding was conducted iteratively and inductively, allowing themes to be developed from participants' accounts rather than being imposed by pre-existing frameworks. Codes were then collated into themes to make sense of their differences, similarities, and relationships. Braun and Clarke (2019) refer to themes as interpretive and creative stories about the data. Each code was discussed and checked against these provisional themes by authors LN and JB before being clarified, defined, and named. Additionally, sub-themes were created to share a key concept within a theme (Braun & Clarke, 2022). No attempt was made to prioritise semantic coding over latent coding or vice-versa, as both were considered important in this qualitative health-related research. All authors reviewed the themes and together discussed and refined the analysis. The researcher's positionality was acknowledged throughout, with reflexive engagement ensuring that the themes reflected participants situated realities rather than being shaped solely by researcher assumptions. Through this lens, the findings are not presented as 'truths', but as contextually situated interpretations that make sense of participants' experiences within the broader healthcare landscape. Investigator triangulation and patient and public involvement (PPI) were integrated into the reflexive process, ensuring that interpretations remained relevant to those with lived experience.

To ensure methodological coherence and reflexive openness, the present study also constructed an evaluative tool using the Reflexive Thematic Analysis Reporting Guidelines (RTARG). These guidelines have been recently published by Braun and Clarke (2024) and are recommended over other qualitative checklists, such as the consolidated criteria for reporting qualitative research (COREQ) by Tong et al. (2007) as they are informed by the values of RTA (see Supplementary file B).

Patient and public involvement

A patient and public involvement (PPI) group of five individuals who met the inclusion criteria but did not participate in the original interviews were invited to review a detailed presentation of the findings. These individuals were recruited through a different PCN in another area of the Northwest of England. All five individuals (3 males and 2 females) have been living with T2D for an average of 5.6 years (ranging from 3 to 8 years) and described their CVD as AMI ($n = 3$), CHD ($n = 1$) and Angina ($n = 1$). The PPI group was introduced after the primary thematic analysis had been conducted to critically assess whether the generated themes resonated with the lived experiences of the participants, rather than to develop new codes or alter the initial categorisation. The group was encouraged to engage in reflective discussions, critically evaluating the interpretations of the data and the relevance of the findings. We specifically selected this approach due to the complex nature of multimorbidity, as PPI involvement offered a valuable means of challenging researcher assumptions and grounding the findings in real world patient experiences (Greenhalgh et al., 2019). This approach is also in line with Madden and Speed (2017), who argue that PPI should not be treated as a conventional qualitative method but rather as a strategic tool to enhance the relevance and impact of research. Consistent with this view, our use of PPI positioned contributors as co-reflective partners rather than as sources of primary data. Quotes from the PPI participants have been incorporated into the analysis where appropriate.

Researcher description and discussion of reflexivity

The authors came from a diverse range of backgrounds, the first author (JB) is a female trainee Health Psychologist (BSc, MSc) with a keen interest in T2D management and multimorbidity research, and the corresponding author (LN) is a Registered Health Psychologist, Reader in Applied Health Psychology and had research and clinical expertise in diabetes, CVD and qualitative methodology. The third author (KU) has expertise in metabolic health research and the fourth (RL) and fifth author (IJ) both have expertise in cardiovascular nursing practice and research.

As researchers with expertise in these fields we acknowledge that our professional backgrounds may shape our understanding of the lived experiences of individuals managing T2D and CVD. For example, out knowledge of psychosocial factors, self-management, and healthcare systems might lead us to interpret participants' experiences through a health psychology lens, potentially influencing how we engage with data. Furthermore, our experience in community health interventions and patient-centred approaches means we acknowledge as a research team we are predisposed to viewing multimorbidity management as a complex interplay of psychological, social, and systemic factors. While this perspective adds depth to our interpretation, it also requires careful reflexivity to ensure we do not unintentionally privilege certain narratives over others. To ensure a balanced interpretation of participants' experiences, we employed several reflexive strategies, including reflexive journaling (first author and interviewer engaged in journaling post interviews to capture thoughts, emotions and experiences discussed throughout the interviews) to help us critically examine how the researcher perspectives might shape data interpretation. All authors were also actively involved in the analysis, providing triangulation in interpretation to ensure a nuanced and comprehensive understanding of the data. PPI in the analytical interpretation further offered valuable insights, enhancing the depth and relevance of the findings and the context of the research, such as the setting, sample size and participant characteristics, were also distinguished to allow others to judge its applicability to different settings accurately.

All quotes from the participants that make up the generated themes and subthemes can be found in supplementary file C. Participants were also given the option on the consent form for their anonymised transcripts to be deposited in a data-sharing archive so that their data could be used for future research and learning purposes (Brown et al., 2025). However, in line with ethical processes, full transcripts have not been shared publicly, as participants did not consent to this.

Analysis

The analysis aimed to understand how individuals living with T2D and CVD as a multimorbidity perceive, experience and manage their conditions within the context of healthcare and daily life. Three key themes were identified, highlighting the complex and often fragmented experiences of individuals living with these conditions, these were: The Disconnected Conditions, Lack of Integrated Care and Navigating and Adapting to Multimorbidity. Participants frequently reported limited awareness of the connection between T2D and CVD, compounded by care that is often perceived as disjointed and focused separately on each condition. Further, the emotional and psychological ramifications of living with these chronic conditions add to these challenges, with financial strain for some exacerbating both physical and mental health burdens. Together, these themes reflect a need for more integrated, patient-centred care approaches that consider the holistic needs of individuals managing multimorbidity. Figure 1 depicts the relationship between the decided themes and subthemes.

Theme 1: the disconnected conditions

This major theme categorised into two subthemes (The Hidden Connection) and (The Resignation of Diabetes) highlights the perceived unknown link between T2D and CVD, the difference in attitude towards the diseases and how HCPs need to be clearer in explanations and guidance regarding the management of this multimorbidity.

The Hidden connection

Most participants expressed surprise and a lack of awareness regarding the link between their T2D and CVD. They describe not being informed by medical

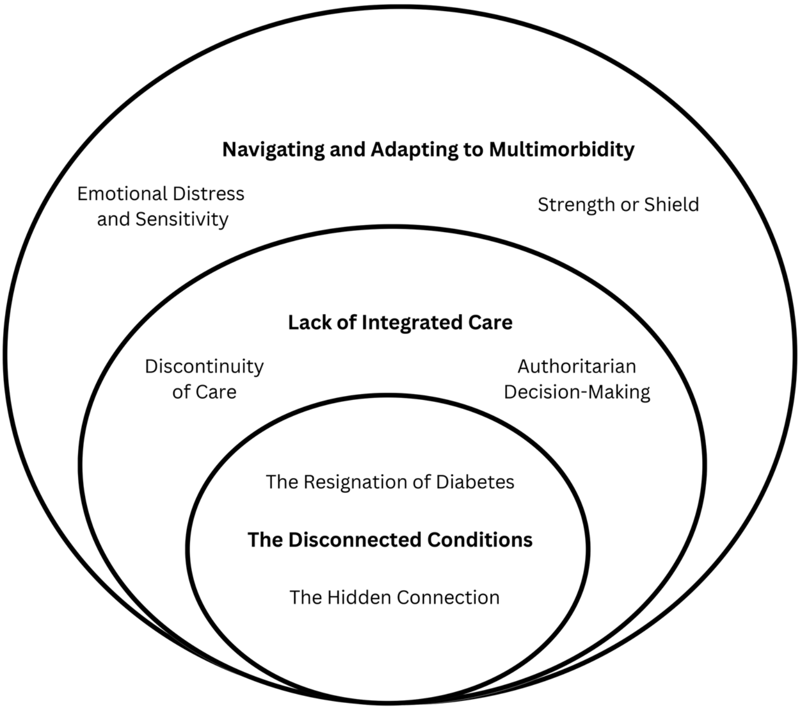

Figure 1. Relationship Between Themes and Subthemes.

professionals about the relationship and felt unaware of the possibility of such a connection:

> No no well unless I wasn't listening at the time as I was in shock but no, I can't think of it but I knew there were problems, like I knew people had amputations and things like that, and that scared me, but she never told me this. *(Participant 26)*

Moreover, the few who were aware of the connection between the two conditions mentioned that they discovered this information through their own research:

> No one in the medical profession its only what I've sort of read…sometimes if you've had heart problems you can get diabetes so I've never had a discussion about that. (*Participant 12)*

This lack of understanding of the relationship between the two conditions was also reflected in the way patients tended to compartmentalise the two conditions in their minds. For example, Participant 16 explicitly stated that they view their T2D and CVD as separate entities, "I've got diabetes, and then I have this heart thing, angina… don't really think of them being together no." This notion that the conditions are complete separate entities was also further emphasised during the PPI discussion as PPI member 3 stated, "I don't see my diabetes like that, I see it as I got this (T2D), and I got that (CVD)."

The Resignation of diabetes

Participants exhibit contrasting attitudes towards their T2D compared to their CVD as like many, participant 2 indicated that they do not perceive T2D as a serious condition, "like I know my diabetes shouldn't be, but it is at the back of my mind." The data suggested participants seemed to feel this way due to their perceived risk perception of CVD being greater than T2D, as participant 3 conveyed, *"well it's just looking at what's more important to monitor…I think the heart one…because if your heart doesn't work that's it isn't it."* Moreover, some participants, although diagnosed, refused to believe they live with T2D at all:

> I put my hands up and confess I am quite in denial about my diabetes…but my opinion is the way technology has changed over the years, early diagnosis of certain conditions is a lot more…. is more possible than it was 20 years ago, it's kind of been identified at really early stage, which is fine I appreciate….I do not and have never suffered with any symptoms of that. *(Participant 9)*

The passage emphasises the rejection they have towards their diagnosis and how they look for blame or mitigation. Additionally, the comment, "have never suffered with any symptoms," highlights that due to the slow disease progression and often unseen nature of complications that are associated with T2D, some individuals do not perceive themselves as living with a long-term condition. Moreover, the absence of noticeable symptoms appeared to result in a sense of acceptance and resignation among some participants which was linked to a lack of motivation for effective self-management:

> I thought it was quite controlled……how can I explain this without saying bazar *pauses*….people can tell me you need to eat salad, you need to eat cous cous….you need to eat that…and I say ok….and I'll say yeah yeah but I'm not that guy….ill change gradually. *(Participant 1)*

His dismissive tone suggests a reluctance to embrace lifestyle modifications associated with T2D, as the statement "I'm not that guy" implies he perceives making dietary changes as unrealistic and disconnected from his reality. However, his earlier comment indicates a possible contradiction. He implies that had he been made aware of the connection between T2D and CVD he might have taken his diagnosis more seriously from the outset:

> "Erm well it would have been nice…*laughs* perhaps kicked things better in perspective as you know heart attack is more frightening than diabetes you know so if they were linked then it would have been a kick to manage to things better". *(Participant 1)*

This suggests that his negative attitude towards lifestyle changes may stem from a lack of understanding about the relationship between T2D and cardiovascular risk, rather than pure resistance. Furthermore, the data suggested that this fragmented approach to self-management may stem from the compartmentalised care provided by healthcare professionals as participants expressed a clear desire for a more integrated understanding of the relationship between T2D and CVD at the point of diagnosis for either condition. For example, Participant 2 reflected on how they would have preferred the connection to be explained, "this is your diabetes, it's a diabetes-related factor… there's a chance of heart disease…and I would like to of been explained it a little bit better." This desire for more cohesive care was further echoed by other participants; for example, Participant 4 explained they would have liked an inventory of CVDs related to T2D, "well, it would have been more useful if someone told me that in the beginning. If you get a diabetic, a list of things you know you could get this heart condition or you could get that."

Overall participants seem to show a strong desire for clearer communication about the relationship between the conditions at the time of diagnosis. They emphasised the need for more of a connected and informative care, with some suggesting that a straightforward explanation or a list of potential CVD risks associated with T2D would have helped them better manage their health from the outset.

Theme 2: lack of integrated care

The overarching theme of lack of integrated care consists of two subthemes (2.1) Authoritarian Decision Making and (2.2) Discontinuity of Care. These subthemes reflect the researcher's interpretation of participants experiences and perceptions of their interactions with HCPs. A common pattern across responses was that participants received singular disease care which contributed to fragmented support and as a result, many felt that, unlike their ongoing care for T2D, their CVD care was isolated and lacked adequate support following diagnosis.

Authoritarian decision-making

Many participants actively expressed that they were not included in decisions regarding their care and felt that HCPs made these decisions on their behalf.

> So you have this *slaps table* this *slaps table* this *slaps table* and this *slaps table* and it's not erm suited to the way you are, it's like oh you're diabetic so you have to have this this and this…maybe it is you need them things'.…but looking at a person as an indiv…not as that's what you need to have as you're a diabetic…yeah so a bit more personalised to you, what's going on with you. *(Participant 11)*

The passage highlights the individual's desire for care to be shared; the words "maybe it is you need them things" suggest she has not dismissed the support available however potentially struggles to implement the self-management strategies suggested as they do not fit with her personal values or way of life. Moreover, the hitting of the table and repeating the word "this," creates a sense that she feels frustrated and emotional with how information has been presented to her. Further, she reiterated some of the negative and objectifying language that has been used to describe her, such as, "Oh, you're diabetic" and "as you're diabetic," implying that she has been made to feel defined only by her condition due to the labelling used by others around her.

This lack of shared decision-making created a sense that several participants' care was based on a biomedical approach which relies solely on medical action to improve patient care:

> A lot more information than I got…I mean if I hadn't…I had stopped taking the medication…because nobody told me what was going on…they gave me a lot of medication, a lot more medication than I am on now…they went in the bin as soon as I got home because nobody told me anything.…I mean even when I was on the ward I must have been in 2 days and they didn't tell me anything.…they just said there's your medication go home and use it. *(Participant 5)*

The above emphasises how the individual felt they were a passive recipient of medical intervention rather than actively considered a partner in their own care and consequently admitted avoiding following medical advice because of this. The repetition of "nobody told me," reveals a sense of helplessness and the participant describes behaviours indicating distress, that seems to have been created through the perceived poor communication and suboptimal treatment.

Notably, although the above participant received this type of care 15 years ago, those who had experienced a CVD diagnosis within the last year mirrored similar experiences:

> Well I did see one doctor…and I didn't even know what the appointment was about or anything I didn't see her again.…she didn't really ask how I have been and said I just needed these other tablets, but I was in there for 5 minutes or even less so you know 15 minutes late and then on your way. *(Participant 27)*

Similarly, this passage suggests communication and education continue to be perceived as poor as there is a clear frustration towards the short consultation spent with HCPs. The words "didn't ask how I have been" shows the individual's desire to engage with a professional about their feelings; however, it leaves them with the perception that the HCP was focused solely on the management of the condition. The belief that HCPs can be passive was further enhanced through PPI group discussion as PPI member 3 explained, "you can just tell it's another day at the office for them, there's no being you know…personable". The consequences of this is echoed by another who highlighted how the current system used within the service negatively affects the quality of relationships between the practitioner and patient:

> You used to have a family doctor 30 or 40 years ago and now you know he'd give you the time, much more time to talk and as I say it's all rushed now. You don't see the same GP, you don't necessarily see the same erm diabetic nurse so there's that sort of confusion and I know the days of the old family doctor aren't going to come back but it's gone so far the other way. *(Participant 12)*

The words "much more time to talk" further emphasise the perceived lack of shared decision-making as although many seemed to value the ability to speak and be a part of their health care consultation, the "rushed" nature of appointments does not allow for this opportunity and subsequently seems to affect the quality of relationships with HCPs and their perception of community care. Additionally, the comparison to "30 to 40 years ago" highlights that potentially due to the age range of those interviewed, many have witnessed the evolution of healthcare and feel the effects of this shift more acutely than younger generations. The use of strong negative language like "gone so far the other way" intensifies this perception of a severe decline in the quality of community services.

Discontinuity of care

Nearly all participants indicated that while they continue to receive regular appointments for their T2D, they have not discussed their CVD with a healthcare professional at their community service provider since diagnosis. This points to a systemic separation in care that reinforces the divide between the two conditions:

> Excellent at first *long pause* excellent reviews on the diabetic front, not so hot on the heart front…*sighs*…I mean I think if my numbers were showing a trend towards the likeliness of another heart attack, would I be aware? Is anyone checking my numbers? And if I'm not told then who knows. *(Participant 13)*

The passage provides a real sense the participant perceives they have received a lack of proactive care from their community service since their CVD incident. They use rhetorical questions regarding their future CVD risk to convey a point that leaves a lasting impression relating to their feelings of neglect rather than seeking an answer to their unknown cardiac outcomes. Moreover, the open use of "is anyone checking my numbers?" creates a sense of vulnerability as they openly admit their limited understanding on the control of their condition. Additionally, his reply of "and if I'm not then who knows" further emphasises their point of perceived discontinuity of care and creates a sense they feel rather alone in the management of their CVD. The lack of continuity in CVD care became even more apparent when participants were asked whether they felt their cardiovascular health was monitored during T2D reviews. While some noted that certain CVD-related biomarkers were occasionally assessed, there was little communication from healthcare professionals about the importance of managing both conditions in a coordinated way. As participant 12 put it, "the only time they touch on it (CVD) is when they take my blood pressure, but that's about it as far as the heart is concerned". Moreover, PPI members agreed care for their CVD does seem to diminish once diagnosed, with PPI member 4 suggesting they felt in “no man’s land” between acute treatment and on-going management. Additionally, several participants expressed they do not always feel comfortable contacting their community service in a time of medical need:

> Maybe a bit more support from GPs as I say no one checked my heart following the heart attack and then when my sugars were 15 I was frightened but didn’t think I could get support from my GP practice. *(Participant 27)*

The passage highlights how poor relationships with practitioners and perceived lack of support affect participants’ confidence in reaching out to community services. Further, this hesitancy to contact community services seems to be intensified by the perceived difficulty in booking an appointment, as Participant 10 bluntly stated “yeah I mean doctors been great, it’s getting a doctor though isn’t it.” Further, during discussion PPI member 1 elaborated on this by suggesting “you feel in a state of uncertainty, but you can’t turn to no one professionally as you get discharged”.

Overall, the subthemes emphasise a clear gap in care for people with both T2D and CVD as while many see regular HCPs for T2D, most expressed feelings of neglect and uncertainty about their CVD. This highlights the need for more coordinated, person-centred care that actively involves individuals in decision-making and provides clear guidance for managing both conditions together.

Theme 3: navigating and adapting to multimorbidity

The overarching theme of navigating and adapting to multimorbidity consists of two subthemes, sections “Emotional Distress and Sensitivity” and “Strength or Shield.” These subthemes convey the perceived separate emotional toll T2D and CVD can cause and the ways individuals manage this psychological burden. Although participants did not always explicitly discuss the psychological effects of managing both conditions together, their accounts revealed an underlying emotional and cognitive burden related to balancing multiple health concerns and further, suggested intertwined in some individuals’ poor mental health was financial hardship and employment issues associated with their poor health.

Emotional distress and sensitivity

Although individuals experience T2D and CVD a part of multimorbidity, the emotional impact of each condition was expressed separately. CVD, in particular was linked to greater emotional distress likely because of its sudden and life threatening nature which appeared to generate persistent fear and anxiety. Participant 18 reflected on these feelings, “every movement I would think or like pain I would think oh am I heading into another one and will I make it out of this one alive.” In contrast, T2D was often seen as a lesser, more manageable concern as Participant 21 articulated, "no one can force me to go out and jog or to eat healthy… it’s down to me." This differential emotional engagement suggests that conditions with visible, acute symptoms, such as CVD, trigger stronger adherence to health practices than those with less visible, slower progressive risks, like T2D. Coupled with fear of a possible recurrence of their CVD, most participants seemed to be regularly living in the trauma of their diagnosis. Participant 23 emphasises this point by remembering the exact date of his AMI, “yeah 14th august 2008, I remember it like it was yesterday and the feeling well erm it’s the same for everyone who has a heart attack you know I don’t think it ever goes away.” Additionally, some participants emphasised a vicious cycle in which chronic illness contributed to financial struggles, exacerbating psychological distress. As Participant 10 shared, “after my bypass…I fell into a lot of debt…I had to use credit cards to pay bills,” later describing how he “broke down to my wife” as the combined weight of his debt and health conditions became too overwhelming.

Although emotional distress and sensitivity were less heightened when individuals discussed their T2D, a frequent theme noted was how participants’ relationship with food changed following diagnosis. Several participants described the stress and sensitivity relating to transitioning from their habitual diets to ones more suitable for diabetes management:

> What people generally eat in this country is bad for them isn’t it…so you have to pull yourself out of that normality and the worlds of salads and no carbohydrates which is alien to what you have been used to. *(Participant 13)*

This passage highlights the significant cultural shift participants perceive they have to face that can make them feel quite restricted; the use of “world of salads” emphasises the unnatural and overwhelming feeling he has towards this modification and how he has struggled to adapt this to his usual everyday lifestyle. This sentiment was further echoed by Participant 14, who described the overwhelming task of scrutinising food labels, “you look at the labels and you’re looking for red and green and then you think I can’t cut everything out I need to live.” Furthermore, participants frequently mentioned that this constant thought of what to eat lead to feelings of guilt, frustration, and mental fatigue as participant 17 vividly described this cycle of “having guilt every time I eat… it’s constant.” Additionally, some individuals emphasised how the psychological toll of higher prices caused them to feel emotionally distressed, as Participant 15 expressed, “It’s crippling us… you know the difference between [lists different supermarket shops] … and I’ve had no support.” This statement suggests they are forced to opt for cheaper, less preferred options due to financial strain, which may not be the most beneficial dietary choices for managing their conditions. Moreover, the words emotive use of the words “its crippling us” coupled with “I’ve had no support” highlights a perceived gap in care, where socioeconomic challenges affecting disease management are overlooked by HCPs.

Strength or Shield

Although some participants who were given the opportunity, to seek professional help found solace in therapy sessions:

> Yeah it was afterwards erm I went to *insert local mental health charity* saw a girl there, it was good to offload, and you can just speak all your crap out and you go home and you think I’ve got rid of that…so I had about 6 to 8 sessions and it was great. *(Participant 10)*

Many, like participant 13, who have not experienced psychological intervention, when asked if the opportunity was to become available, were not keen on the idea, "you still need to go through it yourself." This resilient attitude was a common theme with many individuals suggesting they perceive themselves to push on rather than sitting with their emotions as a way of coping. This coping mechanism may be influenced by the age range of the participants, as most were older individuals who might feel less comfortable discussing mental health compared to younger generations. Furthermore, Participant 7 re-echoed this resilience, "it's happened you can't undo it. I've never been somebody to look back and think if only." Furthermore, this strong attitude was noted particularly in male participants, who seemed to manage by adjusting their outlook on life to navigate their condition more effectively. For example, participant 21 claimed, "on a personal level, I think it changed me I do consider my mortality, and I do occasionally think about that…but it is in the back of my mind…and I am aware of it on a daily basis." Plausibly, this perception relates to gender differences in coping where traditional masculine norms impact attitudes towards psychological support as some participants expressed reluctance towards acknowledging emotional struggles. Moreover, Participant 1, also male, illustrated this attitude, explaining, "you know I've been asked a few times…are you depressed… and the answer is always going to be no…that's the type of character I am." This possible lack of recognition was further echoed in PPI discussion as PPI member 5 also shared, "I just block it out…that's how I cope, I can't sit there and think about my conditions I just have to block it." However, avoiding reality could prevent male participants from receiving the support they need and further lead to complete isolation. Additionally, some individuals, like Participant 10, claimed they turned to unhealthy habits such as smoking to mask or temporarily ease the pain and distress caused by their on-going poor health, "it was a life change but then Christmas came, and I was sick of being sick so I went back on the ciggys (cigarettes) and been on the ciggys (cigarettes) since". The words "sick of being sick" emphasises a sense of fatigue, highlighting the emotional toll individuals can feel when they feel overwhelmed by their multimorbidity. Furthermore, others chose to engage with smoking as a form of psychological or emotional relief:

> Look, I can't afford to go do these fancy holidays, I got kids and all the rest of it, and I don't know I think the answer is no….it's my choice and my outlet (smoking), so to speak to erm yeah. *(Participant 18)*

The passage suggests that despite previous recognition of its negative health effects on his long-term conditions due to their frustration on their financial situation or demands of family life the individual uses smoking as a coping mechanism and a shield against emotional stress. Moreover, Participant 15 suggested that due to the psychological distress caused by their conditions coupled with trying to manage financially, they seemed to feel they have to protect themselves by becoming a social recluse, "I struggled to even come in for this…to talk to you today". This change in social behaviour further emphasises the broader impact health conditions can have on personal relationships and social life.

Overall, the data analysis revealed that although many individuals did not perceive their T2D and CVD as interconnected, largely due to a limited understanding of the relationship, the psychological distress linked to CVD was more pronounced. Nonetheless, many did still experience significant emotional burden related to their T2D and although the participants did not explicitly describe their conditions as a multimorbidity, living with both simultaneously is likely to be overwhelming. Additionally, several are managing financial pressures and the complex psychological challenges associated with socioeconomic factors and therefore providing better integrated and continuous care that involves patients in decision-making processes and addresses their personalised needs would greatly benefit this group.

Discussion

To date, this is among the first qualitative investigations to explore the lived experiences of individuals managing both T2D and CVD as a multimorbidity. Specifically, the study provides insights into how individuals perceive their care and furthered the knowledge of how these individuals cope with the ongoing challenges of managing two long-term conditions.

A significant finding is the lack of awareness among participants about the interrelationship between T2D and CVD, with many expressing a need for clearer information on CVD risk at the onset of diabetes. This communication gap is not unique to this study's context; for example, Saeedi et al. (2020) found in a global survey of over 12,000 participants that approximately one in six individuals with T2D had never discussed their CVD risk with an HCP. However, the present findings build on these insights and others on CVD risk in T2D patients (Jutterström et al., 2024; Nabolsi, 2020) by showing that even post-CVD diagnosis, many individuals remain unaware of the association. This finding may be attributed to the low uptake of cardiac rehabilitation in the UK, a programme that combines information and exercise for those who have experienced an MI (BHF, 2023) and, as part of the 18 components of care, would have addressed the relationship between T2D and CVD (British Association for Cardiovascular Prevention and Rehabilitation [BACPR], 2023). Although the study did not specifically enquire about participation in cardiac rehabilitation when asked about their healthcare interactions, most who experienced an AMI did not mention this type of programme. Nonetheless, our findings align with Ängerud et al. (2015), who noted that individuals with T2D who have experienced an AMI often reported receiving little to no information from their diabetes care providers about their AMI or future cardiac risks. These findings point to a need for more integrated risk education at diagnosis, helping individuals understand the gravity of their conditions and the importance of self-care practices in preventing future complications. Moreover, several participants described their T2D as asymptomatic or refused to acknowledge their diagnosis despite formal confirmation, aligning with findings from Bennich et al. (2020), who observed that the slow progression of T2D can lead patients to underestimate the disease's seriousness. This knowledge gap directly influences self-care behaviours, as evidenced by Adu et al. (2019), who found that low awareness of diabetes risks often discourages preventative actions. In contrast, many participants shared vivid, emotionally charged memories of their CVD experiences, reflecting the perceived immediate threat of heart disease. According to the Health Belief Model (Becker, 1974), individuals are more likely to adopt preventative behaviours when they perceive a high degree of threat. Consequently, the findings suggest a need to elevate the perceived urgency of T2D self-management alongside CVD risk to improve patient outcomes and prevent further complications.

Many individuals did not perceive their T2D and CVD as connected and viewed them as two separate conditions. Consequently, when patients spoke about their experiences of care, they did in a fragmented way focusing on each condition individually instead of seeing them as part of multimorbidity. The subtheme of "discontinuity of care" captured the participants' sense of disconnection, as while they praised the UK healthcare system for acute care during CVD incidents, many felt support was fragmented post-diagnosis. The study also found that, despite some evidence of CVD risk assessments being conducted during diabetes appointments many individuals still experienced a lack of continuity in their cardiovascular care. This appeared to stem from inadequate communication with HCPs who often failed to explore how patients were coping with their multimorbidity. The findings highlight the need for improved communication, not only regarding the relationship between T2D and CVD but also regarding patients emotional and practical experiences managing both conditions. As while guidelines direct HCPs to assess the physical risk of CVD (European Society of Cardiology, 2023), they do not offer specific recommendations on how to integrate discussions about both conditions into appointments for individuals managing these conditions together. Additionally, this perceived lack of continuity may discourage individuals from engaging with care, as demonstrated by Mathew et al. (2022), who found poor relationships and communication from HCPs hindered adherence to diabetic appointments. Our findings support this, with several participants expressing reluctancy to contact their GP until their multimorbidity has worsened due to their perceived limited access to healthcare services. Further, the study seemed to highlight a perception of fragmented care with many expressing the current time constraints during limited provider-patient interactions, in conjunction with seeing multiple HCPs who predominately steer conversations towards biological aspects of care left them feeling confused and overwhelmed. Moreover, the results indicated that participants did not fully understand or internalise information due to the perceived absence of individualised care. However, from both an epistemological and ontological perspective, it is important to recognise that participants narratives are shaped by their lived experiences within a specific healthcare context. Given participants age many have witnessed significant shifts in medical advancements and substantial changes in patient-provider relationships in chronic disease management. These experiences create generational differences in how these individuals understand and navigate multimorbidity, engage with healthcare systems and approach self-management. Nonetheless, the present results align with Peeler et al. (2024) and Franklin et al. (2018), who found that both patients and HCPs desire better provider-patient relationships, personalised communication, and coordinated care in multimorbidity management. Furthermore, although the NHS England (2019) Long Term Plan, a strategic framework outlining how the NHS aims to enhance the health and care system, highlights the importance of patient involvement, this study suggests that current care practices may not fully align with this objective.

Although patients did not explicitly frame their psychological experiences in terms of multimorbidity, their accounts of the psychological effects of living with both T2D and CVD revealed a deeper emotional and cognitive burden linked to managing these two conditions. For the most part CVD seemed to dominate, with many expressing feelings of emotional distress, increased sensitivity and persistent thoughts of mortality, especially among those who had experienced Angina or an AMI. This ongoing emotional turmoil is well-documented in cardiac literature, where cardiac incident survivors are at heightened risk of developing depression, anxiety, and PTSD

(Sreenivasan et al., 2021). Our findings further revealed that many individuals remain psychologically anchored to the trauma of their AMI, often perceiving the event as a turning point in their lives. Similar results were reported in a qualitative study by Qin et al. (2022), which found that both patients and relatives expressed a strong desire to reshape their lives after an AMI to reduce the further risk of CVD and maintain a normal life. Although the emotional impact of T2D was less acknowledged, participants expressed feeling overwhelmed, particularly for those trying to adjust their diet to better manage the condition found it challenging to incorporate these changes into their daily routine. Many described experiencing feelings of intense guilt and shame around mealtimes, especially during the first year after diagnosis. Nonetheless, many participants expressed a strong sense of personal responsibility for managing their T2D and viewed themselves as adapting with resilience following their CVD diagnosis. This resilience may be partly explained by the average age of participants (62.3 years), as existing research indicates that older adults are often less likely to discuss the psychological impact of chronic illness due to stigma and concerns about disclosing mental health issues (Adams et al., 2024;; Elshaikh et al., 2023). This mindset was particularly evident among male participants, aligning with findings from Jbilou et al. (2019), who noted that men may respond to cardiac events in ways that reflect traditional masculine norms, downplaying emotional vulnerability. While this is not universally true, the findings suggest that both age and gender may shape how individuals cope and their openness to psychological support. Therefore, recognising and addressing individual coping mechanisms within the context of multimorbidity, ensuring that support strategies are aligned with patients' age groups, experiences and expectations could improve holistic care and enhance quality of life. Moreover, as the study focused on exploring individual's perceptions, where they tended to view the conditions separately, the psychological impact of these conditions as a multimorbidity, such as whether the emotional strain of a CVD diagnosis affected their ability to perform certain T2D self-care behaviours was not necessarily explored. Future research should build on these findings to gain a deeper understanding of this aspect.

This study also highlighted some of the socioeconomic challenges faced by individuals living with both T2D and CVD, with some participants describing financial hardship that was often intensified by disruptions to employment following their CVD diagnosis. This finding is consistent with broader empirical data showing a significant increase in economically inactive individuals due to long-term illness in the UK, with more than half reporting co-occurring mental health conditions (Office for National Statistics [ONS], 2023). Similarly, Rippe (2019) emphasised how social and psychological factors can hinder adherence to lifestyle changes following a CVD event and without comprehensive support, these overlapping challenges can result in non-compliance with recommended healthcare behaviours such as smoking. The current study supports this, with a few participants reporting introverted tendencies and turning to smoking as a coping mechanism. These findings indicate that policy interventions aimed at providing financial support could mitigate the socio-economic impact of those living with multiple long term conditions Additionally, while cardiac rehabilitation can positively introduce many from this sample to social engagement opportunities with others from their patient group, which is known to improve mental and physical health (Rashidi et al.,2025), uptake remains low at around 50% (BHF, 2022). Therefore, encouraging this type of support at the beginning and then throughout the individuals CVD journey may help alleviate the isolation and psychological burden experienced by these individuals

Strengths and limitations

This study contributes to understanding the real-world experiences of individuals managing T2D alongside CVD, providing insights into their challenges in a fragmented healthcare system. The study adopted a critical realist ontology and contextualist epistemology, and by doing this offers a coherent participant-anchored interpretation of the challenges faced by individuals managing T2D and CVD. These philosophical underpinnings are woven throughout the research process, shaping data collection, analysis, and interpretation in ways that remain grounded in participants' lived realities. The study's trustworthiness was strengthened by well-established data collection methods, including semi-structured interviews, and investigator triangulation, enhancing the reliability of thematic interpretations. Additionally, PPI was used as a form of interpretative triangulation to validate the themes that captured key aspects of living with both T2D and CVD, which are often interrelated and influence each other in complex ways and given the complexity of multimorbidity, incorporating PPI in this manner helped challenge researcher assumptions and ensured that the findings were grounded in the real-world experiences of patients (Greenhalgh et al., 2019). However, despite these strengths, certain limitations should be noted. Although efforts were made to recruit an equal number of male and female participants, most respondents were male (approximately 71%), potentially limiting the generalisability of findings related to gender-specific coping and healthcare needs. Prior research indicates that males and females often differ in their coping strategies for long-term conditions (Patwardhan et al., 2024), highlighting the need for future studies to include a more gender-balanced sample. Additionally, participants were mainly white from the Northwest of England, which may not reflect the broader experiences and views of all individuals living with T2D and CVD across different regions, limiting the studies' generalisability as there was no accountability for those from diverse ethics backgrounds or different geographical regions. Previous research has acknowledged the differences in managing diabetes based on ethnic differences (Patel et al., 2021) and for non-white individuals in the UK living with CVD (Lotto et al., 2022) therefore to gain a more inclusive understanding, future studies should explore the experiences of those from various ethnicities and geographical locations, as cultural differences may impact perceptions of T2D and CVD and their associated risks (Vaja et al., 2021).

Although a few of the interviews were shorter in duration (10–15 min), this does not necessarily equate to a limitation in data quality. The interview schedule, informed by open-ended questions, was designed to elicit personal narratives and encourage deep reflection on how participants navigate the intersection of T2D and CVD within the healthcare system. However, we recognise that engagement with the concept of multimorbidity varied among participants, influencing interview length in different ways. For some individuals, discussing their conditions as an interconnected experience was challenging, suggesting difficulties in conceptualising or taking ownership of their multimorbidity. While this resulted in shorter interviews, these interactions provide valuable insights into the complexities of illness perception and the potential barriers to patient engagement in healthcare discussions. This, in itself, is an important finding that may inform future patient-centred interventions. Conversely, some participants were highly articulate and provided concise but comprehensive responses, demonstrating clarity in their understanding of their conditions and their healthcare experiences. These interviews, though perhaps not as long, still captured meaningful, well-structured narratives that aligned with the broader themes identified across the dataset. Importantly, across the full set of interviews, a rich pattern of similarities and differences were generated ensuring that the data as a whole was comprehensive in exploring patient experiences. Future research may refine interview strategies to encourage longer discussions where necessary, but the depth and breadth of insights gained from this study remain robust and informative.

Clinical implications

This study highlights a significant gap in patient knowledge regarding the interrelated relationship between T2D and CVD, suggesting a pressing need for HCPs to proactively educate individuals living with T2D and CVD of their future CVD risk. This should ideally occur at diagnosis, during routine appointment periods and whenever individuals are diagnosed with both conditions, fostering a clearer understanding of how managing T2D plays a key role in the CVD secondary prevention agenda. Notably, many participants viewed CVD as more life-threatening than T2D, and this perceived severity could serve as a motivational lever. By framing T2D management as an essential part of preventing CVD progression, HCPs could encourage more consistent self-care behaviours among patients. Additionally, the findings suggest that CVD often triggers a lasting psychological impact, with many participants experiencing ongoing trauma and anxiety related to their CVD diagnosis. Limited studies have looked at the psychological effects of living with both conditions; however, using the present findings, we recommend interventions that combine education on the connection between T2D and CVD, T2D dietary and self-management information along with strategies for coping with health-related anxiety could enhance patient well-being and improve outcomes. However, further research is needed to deepen the understanding of how the psychological impacts of T2D and CVD interact within the context of multimorbidity, to improve and more effectively tailor support interventions.

Conclusion

The thematic analysis sheds light on the complex experiences of individuals living with T2D and CVD as a multimorbidity, emphasising the critical need for comprehensive, integrated patient education to address the interconnected nature of these conditions. Findings suggest that HCPs should strive to provide clear, consistent and accessible information while promoting a personalised, proactive and shared approach to managing both conditions (NHS England, 2020). The study further highlights the need for interventions that specifically enhance coping strategies, particularly for individuals stuck in the psychological burden of living with CVD. Additionally, policy interventions aimed at reducing economic strain, ensuring access to mental health services, and supporting social engagement could significantly improve patients' capacity to manage these complex conditions. Future research should also explore methods by which HCPs can more effectively communicate CVD risks to individuals living with T2D or both conditions as a multimorbidity. Additionally, our research indicates that older adults, particularly men often find it challenging to discuss psychological stress, therefore it is important for future research to gain a deeper exploration on how this influences their perception of this multimorbidity and whether there are significant differences in this perception compared to other individuals.

Overall, this study adds to the body of literature on multimorbidity, offering insights into the specific challenges of individuals navigating both T2D and CVD and the findings emphasise the need for a holistic and personalised approach to managing T2D and CVD as a multimorbidity. Future interventions tailored to individual needs, considering factors such as gender, age and disease duration, could enhance the effectiveness of future support programs.

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References

Adams, C., Gringart, E., & Strobel, N. (2024). Barriers to mental health help-seeking among older adults with chronic diseases. *Australian Psychologist*, *59*(2), 154–165. https://doi.org/10.1080/00050067.2023.2282540

Adu, M. D., Malabu, U. H., Malau-Aduli, A. E. O., & Malau-Aduli, B. S. (2019). Enablers and barriers to effective diabetes self-management: A multi-national investigation. *PLoS One*, *14*(6), e0217771. https://doi.org/10.1371/journal.pone.0217771

Ängerud, K. H., Brulin, C., Eliasson, M., Näslund, U., & Hörnsten, Å. (2015). The process of care-seeking for myocardial infarction among patients with diabetes. *The Journal of Cardiovascular Nursing*, *30*(5), E1–E8. https://doi.org/10.1097/JCN.0000000000000195

Avogaro, A., Bonora, E., Consoli, A., Del Prato, S., Genovese, S., & Giorgino, F. (2019). Glucose-lowering therapy and cardiovascular outcomes in patients with type 2 diabetes mellitus and acute coronary syndrome. *Diabetes & Vascular Disease Research*, *16*(5), 399–414. https://doi.org/10.1177/1479164119845612

Babes, E. E., Bustea, C., Behl, T., Abdel-Daim, M. M., Nechifor, A. C., Stoicescu, M., Brisc, C. M., Moisi, M., Gitea, D., Iovanovici, D. C., Bungau, A. F., Tit, D. M., & Bungau, S. G. (2022). Acute coronary syndromes in diabetic patients, outcome, revascularization, and antithrombotic therapy. *Biomedicine & Pharmacotherapy = Biomedecine & pharmacotherapie*, *148*, 112772. https://doi.org/10.1016/j.biopha.2022.112772

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs*, *2*(4), 324–508. https://doi.org/10.1177/109019817400200405

Bennich, B. B., Munch, L., Overgaard, D., Konradsen, H., Knop, F. K., Røder, M., Vilsbøll, T., & Egerod, I. (2020). Experience of family function, family involvement, and self-management in adult patients with type 2 diabetes: A thematic analysis. *Journal of Advanced Nursing*, *76*(2), 621–631. https://doi.org/10.1111/jan.14256

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health.*, *11*(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications. https://doi.org/10.1007/978-3-030-84877-4

Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, *9*(1), 3–26. https://doi.org/10.1037/qup0000196

Braun, V., & Clarke, V. (2024). Supporting best practice in reflexive thematic analysis reporting in Palliative Medicine: A review of published research and introduction to the Reflexive Thematic Analysis Reporting Guidelines (RTARG). *Palliative Medicine*, *38*(6), 608–616. https://doi.org/10.1177/02692163241234800

British Association for Cardiovascular Prevention and Rehabilitation (BACPR). (2023). BACPR standards and core components 2023. https://www.cardiacrehabilitation.org.uk/site/docs/BACPR-Standards-and-Core-Components-2023.pdf

British Heart Foundation (BHF). (2022). Heart & circulatory disease statistics 2022. https://www.bhf.org.uk/-/media/files/for-professionals/research/heart-statistics/bhf-cvd-statistics-compendium-2022.pdf

British Heart Foundation (BHF). (2023). Heart & circulatory disease statistics 2023. https://www.bhf.org.uk/-/media/files/for-professionals/research/heart-statistics/bhf-cvd-statistics-compendium-2023.pdf

Brown, J., Newson, L., Umeh, K., Lotto, R., & Jones, I. (2025). *Living with a multimorbidity. A qualitative study on the personal perspectives of patients with type 2 diabetes and cardiovascular disease, 2023–2024.*[data collection]. UK Data Service. SN:857704, https://doi.org/10.5255/UKDA-SN-857704

Byrne, R. A., Rossello, X., Coughlan, J. J., Barbato, E., Berry, C., Chieffo, A., Claeys, M. J., Dan, G. A., Dweck, M. R., Galbraith, M., Gilard, M., Hinterbuchner, L., Jankowska, E. A., Jüni, P., Kimura, T., Kunadian, V., Leosdottir, M., Lorusso, R., Pedretti, R. F. E., … Ibanez, B. (2023). 2023 ESC guidelines for the management of acute coronary syndromes. *European Heart Journal*, *44*(38), 3720–3826. https://doi.org/10.1093/eurheartj/ehad191

Cai, X., Zhang, Y., Li, M., Wu, J. H., Mai, L., Li, J., Yang, Y., Hu, Y., & Huang, Y. (2020). Association between Prediabetes and risk of all cause mortality and cardiovascular disease: Updated meta-analysis. *BMJ (Clinical Research ed.)*, *370*, m2297. https://doi.org/10.1136/bmj.m2297

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing: JRN*, *25*(8), 652–661. https://doi.org/10.1177/1744987120927206

Chowdhury, S. R., Chandra Das, D., Sunna, T. C., Beyene, J., & Hossain, A. (2023). Global and regional prevalence of multimorbidity in the adult population in community settings: A systematic review and meta-analysis. *EClinicalMedicine*, *57*, 101860. https://doi.org/10.1016/j.eclinm.2023.101860

Diabetes.co.uk. (2023, October 29). Diabetes prevalence. *Diabetes.co.uk*. https://www.diabetes.co.uk/diabetes-prevalence.html

Elshaikh, U., Sheik, R., Saeed, R. K. M., Chivese, T., & Alsayed Hassan, D. (2023). Barriers and facilitators of older adults for professional mental health help-seeking: A systematic review. *BMC Geriatrics*, *23*, (1)*, *, 516. https://doi.org/10.1186/s12877-023-04229-x

European Society of Cardiology. (2023, November). CVD and diabetes guidelines. European Society of Cardiology. Retrieved April 9, 2025, from https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/CVD-and-Diabetes-Guidelines

Franklin, M., Lewis, S., Willis, K., Bourke-Taylor, H., & Smith, L. (2018). Patients' and healthcare professionals' perceptions of self-management support interactions: Systematic review and qualitative synthesis. *Chronic Illness*, *14*(2), 79–103. https://doi.org/10.1177/1742395317710082

Galicia-Garcia, U., Benito-Vicente, A., Jebari, S., Larrea-Sebal, A., Siddiqi, H., Uribe, K. B., Ostolaza, H., & Martín, C. (2020). Pathophysiology of type 2 diabetes mellitus. *International Journal of Molecular Sciences*, *21*(17), 6275. https://doi.org/10.3390/ijms21176275

Goyal, R., Singhal, M., & Jialal, I. (2023). Type 2 diabetes. In *StatPearls [Internet]*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK513253/

Greenhalgh, T., Hinton, L., Finlay, T., Macfarlane, A., Fahy, N., Clyde, B., & Chant, A. (2019). Frameworks for supporting patient and public involvement in research: Systematic review and co-design pilot. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy*, *22*(4), 785–801. https://doi.org/10.1111/hex.12888

Huang, Y., Cai, X., Mai, W., Li, M., & Hu, Y. (2016). Association between prediabetes and risk of cardiovascular disease and all-cause mortality: Systematic review and meta-analysis. *BMJ (Clinical Research ed.)*, *355*, i5953. https://doi.org/10.1136/bmj.i5953

Huynh-Hohnbaum, A. L., Marshall, L., Villa, V. M., & Lee, G. (2015). Self-management of heart disease in older adults. *Home Health Care Services Quarterly*, *34*(3–4), 159–172. https://doi.org/10.1080/01621424.2015.1092909

Inoue, K., Beekley, J., Goto, A., Jeon, C. Y., & Ritz, B. R. (2020). Depression and cardiovascular disease events among patients with type 2 diabetes: A systematic review and meta-analysis with bias analysis. *Journal of Diabetes and Its Complications*, *34*(12), 107710. https://doi.org/10.1016/j.jdiacomp.2020.107710

Jbilou, J., Grenier, J., Chomienne, M. H., Talbot, F., Tulloch, H., D'Antono, B., & Greenman, P. (2019). Understanding men's psychological reactions and experience following a cardiac event: A qualitative study from the MindTheHeart project. *BMJ Open*, *9*(9), e029560. https://doi.org/10.1136/bmjopen-2019-029560

Johnston, C. A., Moreno, J. P., & Foreyt, J. P. (2014). Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. *Current Atherosclerosis Reports*, *16*(12), 457. https://doi.org/10.1007/s11883-014-0457-6

Jutterström, L., Stenlund, A. L., Otten, J., Lilja, M., & Hellström Ängerud, K. (2024). Awareness of cardiovascular risk among persons with type 2 diabetes: A qualitative study. *International Journal of Qualitative Studies on Health and Well-Being*, *19*(1), 2294512. https://doi.org/10.1080/17482631.2023.2294512

Lakka, T. A., Aittola, K., Järvelä-Reijonen, E., Tilles-Tirkkonen, T., Männikkö, R., Lintu, N., Karhunen, L., Kolehmainen, M., Harjumaa, M., Mattila, E., Järvenpää, R., Ermes, M., Mikkonen, S., Martikainen, J., Poutanen, K., Schwab, U., Absetz, P., Lindström, J., & Pihlajamäki, J. (2023). Real-world effectiveness of digital and group-based lifestyle interventions as compared with usual care to reduce type 2 diabetes risk: A Stop Diabetes pragmatic randomised trial. *The Lancet Regional Health. Europe*, *24*, 100527. https://doi.org/10.1016/j.lanepe.2022.100527

Lotto, R. R., Newson, L., Patel, T., McGinn, E., & Jones, I. D. (2022). Exploring the experiences of the cardiac rehabilitation journey among South Asian patients. *British Journal of Cardiac Nursing*, *17*(1), 1–12. https://doi.org/10.12968/bjca.2021.0109

Madden, M., & Speed, E. (2017). Beware zombies and unicorns: Toward critical patient and public involvement in health research in a neoliberal context. *Frontiers in Sociology*, *2*, 7. https://doi.org/10.3389/fsoc.2017.00007

Madill, A., Jordan, A., & Shirley, C. (2000). Objectivity and reliability in qualitative analysis: Realist, contextualist, and radical constructionist epistemologies. *British Journal of Psychology (London, England: 1953)*, *91(Pt 1)*(1), 1–20. https://doi.org/10.1348/000712600161646

Mak, K. H., Vidal-Petiot, E., Young, R., Sorbets, E., Greenlaw, N., Ford, I., Tendera, M., Ferrari, R., Tardif, J. C., Udell, J. A., Escobedo, J., Fox, K. M., Steg, P. G., & CLARIFY Investigators. (2022). Prevalence of diabetes and impact on cardiovascular events and mortality in patients with chronic coronary syndromes, across multiple geographical regions and ethnicities. *European Journal of Preventive Cardiology*, *28*(16), 1795–1806. https://doi.org/10.1093/eurjpc/zwab011

Mathew, B. K., De Roza, J. G., Liu, C., Goh, L. J., Ooi, C. W., Chen, E., Poon, S., & Tang, W. E. (2022). Which aspect of patient-provider relationship affects acceptance and adherence of insulin therapy in type 2 diabetes mellitus? A qualitative study in primary care. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, *15*, 235–246. https://doi.org/10.2147/DMSO.S344607

Nabolsi, M. M. (2020). Perception of diabetes management and cardiovascular disease risk among men with type 2 diabetes: A qualitative study. *Nursing Open*, *7*(3), 832–840. https://doi.org/10.1002/nop2.458

Narayan, K. M., Boyle, J. P., Thompson, T. J., Sorensen, S. W., & Williamson, D. F. (2003). Lifetime risk for diabetes mellitus in the United States. *JAMA*, *290*(14), 1884–1890. https://doi.org/10.1001/jama.290.14.1884

National Institute for Health and Care Excellence (NICE). (2016). Multimorbidity: Clinical assessment and management (NICE guideline, NG56). https://www.nice.org.uk/guidance/ng56/resources/multimorbidity-clinical-assessment-and-management-pdf-1837516654789

National Institute for Health and Care Research (NIHR). (2021). *Making sense of the evidence: Multiple long-term conditions (multimorbidity)*. NIHR Evidence. https://evidence.nihr.ac.uk/collection/making-sense-of-the-evidence-multiple-long-term-conditions-multimorbidity/

Naylor, C., Parsonage, M., McDaid, D., Knapp, M., Fossy, M., & Galea, A. (2012). Long-term conditions and mental health: The cost of co-morbidities. The King's Fund and Centre for Mental Health. https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/long-term-conditions-mental-health-cost-comorbidities-naylor-feb12.pdf

NHS England. (2019). *The NHS long term plan (Version 1.2)*. NHS England. https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf

NHS England. (2020). *Making the case for the personalised approach*. NHS England. https://www.england.nhs.uk/blog/making-the-case-for-the-personalised-approach/

Office for National Statistics (ONS). (2023, September 20). *Rising ill health and economic inactivity because of long-term sickness in the UK, 2019 to 2023*. Office for National Statistics. https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/economicinactivity/articles/risingillhealthandeconomicinactivitybecauseoflongtermsicknessuk/2019to2023

Patel, T., Umeh, K., Poole, H., Vaja, I., & Newson, L. (2021). Cultural identity conflict informs engagement with self-management behaviours for South Asian patients living with type-2 diabetes: A critical interpretative synthesis of qualitative research studies. *International Journal of Environmental Research and Public Health*, *18*(5), 2641. https://doi.org/10.3390/ijerph18052641

Patwardhan, V., Gil, G. F., Arrieta, A., Cagney, J., DeGraw, E., Herbert, M. E., Khalil, M., Mullany, E. C., O'Connell, E. M., Spencer, C. N., Stein, C., Valikhanova, A., Gakidou, E., & Flor, L. S. (2024). Differences across the lifespan between females and males in the top 20 causes of disease burden globally: A systematic analysis of the Global Burden of Disease Study 2021. *The Lancet. Public Health*, *9*(5), e282–e294. https://doi.org/10.1016/S2468-2667(24)00053-7

Pearson-Stuttard, J., Cheng, Y. J., Bennett, J., Vamos, E. P., Zhou, B., Valabhji, J., Cross, A. J., Ezzati, M., & Gregg, E. W. (2022). Trends in leading causes of hospitalisation of adults with diabetes in England from 2003 to 2018: An epidemiological analysis of linked primary care records. *The Lancet. Diabetes & Endocrinology*, *10*(1), 46–57. https://doi.org/10.1016/S2213-8587(21)00288-6

Peeler, A., Nelson, K., Agrawalla, V., Badawi, S., Moore, R., Li, D., Street, L., Hager, D. N., Dennison Himmelfarb, C., Davidson, P. M., & Koirala, B. (2024). Living with multimorbidity: A qualitative exploration of shared experiences of patients, family caregivers, and healthcare professionals in managing symptoms in the United States. *Journal of Advanced Nursing*, *80*(6), 2525–2539. https://doi.org/10.1111/jan.15998

Qin, H., Bonderman, D., Brunner, S., Großbichler, T., Scharinger, E., & Mayer, H. (2022). Exploring patients' and relatives' needs following acute myocardial infarction—A qualitative study. *HeilberufeScience*, *13*(3-4), 110–122. https://doi.org/10.1007/s16024-022-00373-3

Rashidi, A., Whitehead, L., Halton, H., Munro, L., Jones, I., & Newson, L. (2025). The changes in health-related quality of life after attending cardiac rehabilitation: A qualitative systematic review of the perspective of patients living with heart disease. *PLoS One*, *20*(1), e0313612. https://doi.org/10.1371/journal.pone.0313612

Rawshani, A., Rawshani, A., Franzén, S., Eliasson, B., Svensson, A. M., Miftaraj, M., McGuire, D. K., Sattar, N., Rosengren, A., & Gudbjörnsdottir, S. (2017). Mortality and cardiovascular disease in type 1 and type 2 diabetes. *The New England Journal of Medicine*, *376*(15), 1407–1418. https://doi.org/10.1056/NEJMoa1608664

Rayman, G., Akpan, A., Cowie, M., Evans, R., Patel, M., Posporelis, S., & Walsh, K. (2022). Managing patients with comorbidities: Future models of care. *Future Healthcare Journal*, *9*(2), 101–105. https://doi.org/10.7861/fhj.2022-0029

Rippe, J. M. (2019). Lifestyle strategies for risk factor reduction, prevention, and treatment of cardiovascular disease. *American Journal of Lifestyle Medicine*, *13*(2), 204–212. https://doi.org/10.1177/1559827618812395

Bhaskar, R. (1978). On the possibility of social scientific knowledge and the limits of naturalism. *Journal for the Theory of Social Behaviour*, *8*(1), 1–28. https://doi.org/10.1111/j.1468-5914.1978.tb00389.x

Saeedi, P., Karuranga, S., Hammond, L., Kaundal, A., Malanda, B., Prystupiuk, M., & Matos, P. (2020). Cardiovascular diseases and risk factors knowledge and awareness in people with type 2 diabetes mellitus: A global evaluation. *Diabetes Research and Clinical Practice*, *165*, 108194. https://doi.org/10.1016/j.diabres.2020.108194

Salas-Salvadó, J., Díaz-López, A., Ruiz-Canela, M., Basora, J., Fitó, M., Corella, D., Serra-Majem, L., Wärnberg, J., Romaguera, D., Estruch, R., Vidal, J., Martínez, J. A., Arós, F., Vázquez, C., Ros, E., Vioque, J., López-Miranda, J., Bueno-Cavanillas, A., Tur, J. A., … Martínez-González, M. Á. (2019). Effect of a lifestyle intervention program with Energy-Restricted Mediterranean diet and exercise on weight loss and cardiovascular risk factors: One-Year results of the PREDIMED-Plus Trial. *Diabetes Care*, *42*(5), 777–788. https://doi.org/10.2337/dc18-0836

Sand, C. D., Rahbek, K., Willadsen, T. G., & Jønsson, A. R. (2021). Prioritizing social identities: Patients' perspective on living with multimorbidity. *Journal of Multimorbidity and Comorbidity*, *11*, 26335565211009375. https://doi.org/10.1177/26335565211009375

Schmidt, S. K., Hemmestad, L., MacDonald, C. S., Langberg, H., & Valentiner, L. S. (2020). Motivation and barriers to maintaining lifestyle changes in patients with type 2 diabetes after an intensive lifestyle intervention (The U-TURN trial): A longitudinal qualitative study. *International Journal of Environmental Research and Public Health*, *17*(20), 7454. https://doi.org/10.3390/ijerph17207454

Sreenivasan, J., Khan, M. S., Khan, S. U., Hooda, U., Aronow, W. S., Panza, J. A., Levine, G. N., Commodore-Mensah, Y., Blumenthal, R. S., & Michos, E. D. (2021). Mental health disorders among patients with acute myocardial infarction in the United States. *American Journal of Preventive Cardiology*, *5*, 100133. https://doi.org/10.1016/j.ajpc.2020.100133

Stafford, M., Steventon, A., Thorlby, R., Fisher, R., Turton, C., & Deeny, S. (2018). Understanding the health care needs of people with multiple health conditions. *The Health Foundation*. https://www.health.org.uk/reports-and-analysis/briefings/understanding-the-health-care-needs-of-people-with-multiple-health

Timonen, V., Foley, G., & Conlon, C. (2024). Quality in qualitative research: A relational process. *Qualitative Research Journal*. https://doi.org/10.1108/QRJ-07-2024-0153

Tomky, D., Tomky, D., Cypress, M., Dang, D., Maryniuk, M., Peyrot, M., & Mensing, C. (2008). AADE position statement. *The Diabetes Educator*, *34*(3), 445–449. https://doi.org/10.1177/0145721708316625

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, *19*(6), 349–357. https://doi.org/10.1093/intqhc/mzm042

Vaja, I., Umeh, K. F., Abayomi, J. C., Patel, T., & Newson, L. (2021). A grounded theory of type 2 diabetes prevention and risk perception. *British Journal of Health Psychology*, *26*(3), 789–806. https://doi.org/10.1111/bjhp.12503

Vrints, H., Andreotti, F., Koskinas, K. C., Rossello, X., Adamo, M., Ainslie, J., Banning, A. P., Budaj, A., Buechel, R. R., Chiariello, G. A., Chieffo, A., Christodorescu, R. M., Deaton, C., Doenst, T., Jones, H. W., Kunadian, V., Mehilli, J., Milojevic, M., Piek, J. J., … Winther, S. (2024). 2024 ESC Guidelines for the management of chronic coronary syndromes: Developed by the task force for the management of chronic coronary syndromes of the European Society of Cardiology (ESC) endorsed by the European Association for Cardio-Thoracic Surgery (EACTS). *European Heart Journal*, *45*(36), 3415–3537. https://doi.org/10.1093/eurheartj/ehae177

World Health Organization (WHO). (2021). *Cardiovascular diseases (CVDs)*. https://www.who.int/health-topics/cardiovascular-diseases#tab=tab_1

Zareini, B., Sørensen, K. K., Blanche, P., Falkentoft, A. C., Fosbøl, E., Køber, L., & Torp-Pedersen, C. (2024). Incidence of depression in patients with cardiovascular disease and type 2 diabetes: A nationwide cohort study. *Clinical Research in Cardiology: Official Journal of the German Cardiac Society*, *113*(11), 1523–1533. https://doi.org/10.1007/s00392-023-02311-3