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A qualitative exploration into the experiences of the menstrual cycle in relation to alcohol use and research

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ABSTRACT

Introduction: Despite approximately half of the population experiencing menstrual cycles, little is known about experiences of fluctuations in mood and behavior relating to alcohol use. Literature has investigated whether the cycle affects alcohol use, but none have explored whether individuals are conscious of effects. It is also crucial to understand what people believe is important for researchers to investigate within this topic. The aim was to qualitatively investigate experiences of the menstrual cycle and how it may affect alcohol use. The second aim was to understand what methods researchers should consider.

Methods: Inductive thematic analysis was used to analyze 20 semi-structured interviews from individuals in the UK.

Results: Results showed alcohol themes: alcohol during menses (reduced consumption); motives for consumption (less social drinking during menses and drinking to cope with premenstrual symptoms); and conscious changes in alcohol use (individuals were unaware of fluctuations). For research themes: menstrual literacy (inadequate education); healthcare (inconsistencies in healthcare provision); and research topics (key areas suggested).

Conclusion: Overall, there are some conscious fluctuations in alcohol use, with regard to menses, and menstrual literacy was generally poor. Further research is needed for other samples (e.g., menopausal individuals and alcohol). Also, improvements in menstrual education are needed to improve menstrual literacy.

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Menstrual cycle; alcohol; hormones

Introduction

The menstrual cycle is defined as the process of ovulation and menstruation in females occurring in approximately 1.8 billion people globally (UNICEF, n.d.). The menstrual cycle is a powerful symbol in societies, cross-culturally and over history (Kaundal & Thakur, 2014). For example, in the thirteenth century, the Roman Catholic Church deemed menstrual blood as impure, which went on to influence a menstrual stigma narrative in publications and historical texts (Ott, 2018). In most cultures, the menstrual cycle continues to be taboo (Lee, 2009), with some people experiencing shame and embarrassment, resulting in attempts to conceal their menstruation (Lee, 2009). The taboo and stigma are detrimental to menstrual health as they lead to poor hygiene practices, and in some cultures, lead to social exclusion and punishment (Lee, 2009; Ranabhat et al., 2015; Thapa et al., 2019). Since the mid-twentieth century, studies of the menstrual cycle experience began (Walker, 2008) which have improved menstrual hygiene and fertility awareness (Richardson et al., 2018).

To date, most research has focussed on the experiences of irregular menstrual cycles and menstrual disorders. For example, polycystic ovary syndrome (PCOS, when a number of large cysts develop on the ovaries) research yields a wealth of information regarding education and resources for support (Gibson-Helm

et al., 2018). Additionally, one systematic review looking into the experiences of endometriosis (a disease where uterine tissue grows outside the uterus, which sheds in response to hormone fluctuations) found 18 papers on the topic (Young et al., 2015). Dysmenorrhea (severe and frequent menstrual cramps and pain) also has a breadth of the literature exploring its effects on mental and physical health and outcomes (Bajalan et al., 2019; Kamel et al., 2017). As well as physical conditions, mental health-related conditions such as premenstrual dysphoric disorder (PMDD, a severe form of premenstrual syndrome) have an extensive existing body of research, with one review reporting 75 studies (Bosman et al., 2016).

Despite the importance of this research, the literature still lacks fundamental understanding of the subjective experience for those with typical menstrual cycles. Research by Choi and McKeown (1997) explored the experiences of a typical cycle in a student sample, finding the key themes of self-other discourse (comparison of menstrual symptoms to others) and management discourse (mostly viewing menstrual management as a hassle). However, education and social views of the menstrual cycle have shifted over time and as such these findings may no longer be applicable.

Given the potential impact of hormonal processes on multiple physical (NHS, 2023), psychological (Baker & Lee, 2018), and behavioral (Schoep et al., 2019) factors, it is important to identify any associations of cycles on key issues that affect women. One such

issue is alcohol use; rates of consumption in women are increasing (Slade et al., 2016) which is associated with a greater risk of a range of physical and mental health harms (e.g., AUD; Peacock et al., 2018). Previous research has shown that the menstrual cycle may influence alcohol use, with fluctuations in consumption dependent on cycle phase (Brown et al., 2008; Mello et al., 1990). More recently, a comprehensive longitudinal study examining the role of fluctuating hormones on alcohol use in those with AUD reported that the menstrual cycle phase was significantly associated with binge drinking and progesterone-to-estradiol ratio (Hoffmann et al., 2024). Yet whether individuals are conscious of these effects remains under-explored. Müller et al. (2021) reported that consumers and those with AUD are often not fully aware of their alcohol use patterns, emphasizing this lack of conscious awareness.

In general, there is a lack of research focussing on the individual experience, but there is a growing consensus that research should explore this. Qualitative methods offer an ideal opportunity to provide a deeper understanding into cyclical fluctuations in behavior, including alcohol use. Given the gap and need for research, this pioneering study is the first to explore the association between alcohol use and the menstrual cycle qualitatively. The research aims of the current study are to a) explore whether females report being aware of any fluctuations in alcohol consumption patterns during their menstrual cycle and factors which may affect this; b) explore considerations for researchers with regard to menstrual cycle research.

Materials and methods

Sample

The present study recruited 20 individuals through purposive sampling: 6 hormonal contraceptive (HC) users and 14 naturally cycling (NC). Eleven participants had previously taken part in a diary-style longitudinal menstrual cycle study. The mean age of the sample was 23.95 (SD = 2.54) years, and the median alcohol unit intake over the previous 2 weeks was 19.95 (IQR = 15.95; 8 g/unit), classing most of the sample as low-risk drinkers. Sampling was conducted until the point at which no new information or themes were observed (theme saturation; Guest et al., 2006). Participants were recruited from England, UK.

Inclusion criteria were people aged between 18 and 35; fluent English speakers; have not had children through childbirth; do not have menstrual irregularities; consume alcohol on at least one occasion each week; and are either NC or using the combined HC. Exclusion criteria were ever received/currently seeking treatment for alcohol use disorder (AUD); trying to cut down alcohol use; post/peri/menopausal; undergoing hysterectomy; using hormonal replacement therapy (HRT); breastfeeding or pregnant; taking medication which affects alcohol use; or has a diagnosis of PMDD. Through the criteria, it ensured findings relevant to those with a “typical” cycle which makes up 75–86% of the population (Whitaker & Critchley, 2016). Please see Table 1 for full demographic information.

Data collection

Semi-structured interviews were conducted online (via video calls using Zoom) between January and April 2022. Interviews

Table 1. Demographic characteristics of the sample.

Characteristics	Subcategories	N
Ethnicity	White British	17
	All other white	2
	Mixed/Multiple ethnic groups	1
Relationship status	Single	4
	In a relationship	15
	Married	1
Occupational status	Employed	7
	Student	11
	Employed and Student	2
Period tracker use*	Yes	15
	No	5
Contraceptive use	NC	14
	HC	6

*The median length of period tracker use was 36 months (range 3–132 months).

were conducted on a one-to-one basis and lasted between 30 and 60 minutes. The interviews were audio-recorded and transcribed by an external transcription service; all identifying information was anonymized, e.g., names, locations, and dates. The study received ethical approval from the University of Liverpool Research Governance Committee beforehand and informed consent was given by all participants.

Firstly, the interview schedule asked factual questions, such as age, ethnicity, employment, cycle information (whether NC or HC) and alcohol use using the Timeline Follow-back (Sobell & Sobell, 1992). The interview also asked about the menstrual cycle in relation to alcohol use and then asked about opinions and considerations for menstrual research (see Appendix for the full interview schedule). Each section included a range of open questions, see Table 2 for example questions in each section.

Data analysis

All data were thematically analyzed by JGW, following the six stage-analysis provided by Braun and Clarke (2014).

Strategies to ensure rigour of findings

Several strategies were employed to ensure the rigor of the findings according to Lincoln and Guba's (1985) criteria: credibility; transferability, dependability, and confirmability. To ensure credibility (value, believability, and confidence in the truth of the findings), rapport was established with all participants both prior to and during the interviews being conducted. During data analysis, JGW kept a reflective log to document methodological decisions, preconceptions, and initial impressions of the data.

Once the data had been analyzed, the themes were member checked by presenting the themes to 15% of the participants

Table 2. Example questions from the interview schedule.

Topic	Example Questions
Menstrual cycle and alcohol	Are there any factors that make it more or less likely that you will use alcohol to cope with low mood or stress?
Research considerations	What factors do you think are important for us to consider when researching the menstrual cycle?

interviewed (see Table 3 for participants' agreement with themes). Participants were asked to rate on a scale of 0–100 (100 = complete agreement) how much they agreed with each theme. For transferability, there is sufficient detail provided regarding the participant sample to evaluate the extent to which the conclusions drawn are transferable to other times, settings, situations, and people. For dependability (stability of the data and how consistent and repeatable it is) and confirmability (neutrality and accuracy of the data), a member of the research team who had not previously interviewed or read transcripts, independently reviewed the findings, interpretations, and conclusions to ensure they were supported by the data.

Results

Given that the interview schedule aimed to address multiple areas, themes are presented in the results under each research aim. In the analysis, six main themes were identified from participants' narratives: openness and communication; perception and attitudes; physiological and psychological effects of menses; impact of menses on life; patterns of alcohol use; inadequate education; healthcare provision; and research topics. Each theme is supported by

Table 3. Participant agreement with themes.

Themes	Mean % Agreement
Alcohol during menses	93.33
Motives for consumption	47.33
Conscious changes in alcohol use	68.33
Menstrual literacy	81.33
Healthcare provision	79.33
Research topics	90.67

two to three subthemes. See Figure 1 for a visual representation of the theme structures. All names included below are pseudonyms.

Research aims one: alcohol and the menstrual cycle

Alcohol during menses

This theme reflects the narrative that individuals were less likely to consume alcohol during menses. Additionally, it reflects the reasons for why individuals report this. The theme consists of two subthemes: less alcohol due to physical effects and less alcohol due to psychological effects.

Less alcohol due to physical effects. Within the narratives, most participants explained that they consumed less alcohol as a result of the physical side effects. They said how drinking would exacerbate menstrual symptoms such as digestive issues and cramping. For example, Nichola states that she consumes less alcohol due to the physical symptoms of digestive issues. Additionally, Rebecca reports that she is less likely to go out to consume alcohol socially due to menstrual symptoms, such as tiredness and again, digestive symptoms.

I think I drink less when I'm on my period because digestive problems. (Nichola – 29 years, NC group)

So I'm probably actually less likely to go out if it's the first day of my period, because I'm knackered, I don't feel like it, I feel bloated. (Rebecca – 26, NC)

Less alcohol due to psychological effects. In addition to physical effects, individuals described how alcohol can exacerbate psychological symptoms that they experience during menses, e.g., anxiety. For example, Noreena states that she tries to avoid consumption during menses to prevent the exacerbation of negative mental states. Like Noreena, Victoria also reports

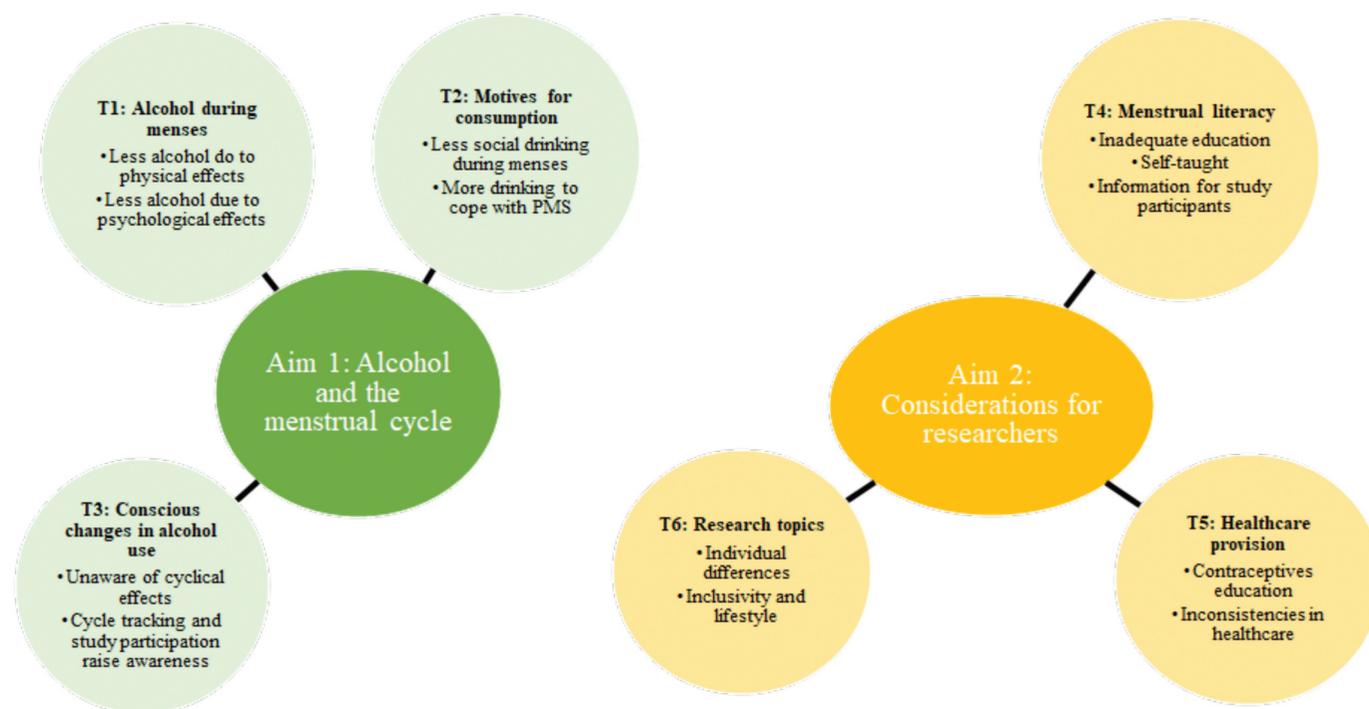


Figure 1. Visual representation of theme structures. T = theme; bullet points = subthemes.

exacerbation of existing negative mood states, specifically feeling low.

I don't think it bothers me that much, I think it's probably just not a good thing to be drinking on a period anyway, with how I get. Psychologically, it just would not be good anyway. (Noreena – 19, NC)

So yes, my period would exacerbate the lows but probably make me even less likely to drink. (Victoria – 26, HC)

Motives for consumption

This theme explores the motivations for alcohol consumption which vary depending on contextual factors. These include drinking for social reasons and drinking to cope. The theme consists of two subthemes: less social drinking during menses and more drinking to cope with PMS.

Less social drinking during menses. Individuals explained how they were less likely to want to socialize during their menses. As a by-product of this they were less likely to consume alcohol. Some described how they would not let menses interrupt plans but if they did attend, again they were less likely to consume alcohol. Overall, many of the women did not want to socialize on day 1 of their periods, which in turn led to a reduction in drinking. Vicky reports that she would avoid socializing for any reason, especially if it involved alcohol use. Aligning with this, Noreena states that she too avoids socializing, in turn reducing the likelihood of social drinking during menses.

I'd say like the first two days are always the worst and heaviest, uncomfortable, painful, so if that's the case I wouldn't typically go out with friends for any reason really, especially not to drink. (Vicky – 24, HC)

My period lasts about three days, so it's not that bad, but I just don't want to socialise or go to the gym or do literally anything that I do normally. (Noreena – 19, NC)

More drinking to cope with PMS. Aside from menses, the only other phase people reported changes in alcohol use patterns was an increase in alcohol use premenstrual. When this was reported, it was explained through the motive of coping. In the premenstrual phase people reported feeling more stressed overall, and as such used alcohol to cope with the negative symptoms. For Rebecca, premenstrual instability impeded attempts to reduce drinking for health reasons. A different motive for consumption when premenstrual was stated by Leanne who is more likely to consume alcohol to cope with PMS specifically cramping.

So I try not to drink Monday, Tuesday, Wednesday, because I'm trying to be healthy and not drink every day and I try and exercise and I try and drink but I guess the week before my period, if I'm feeling irritable, then all of those things just go out the window. So I'd probably be more likely to be like, oh screw it, I know it's a Monday but I'll have a drink. (Rebecca – 26, NC)

Say if it was a Friday . . . I was having bad period cramps, I'd maybe be a bit more inclined to have another drink. (Leanne – 23, HC)

Conscious changes in alcohol use

This theme highlights whether a relationship between the menstrual cycle and alcohol use is conscious to females. The

theme consists of two subthemes: unaware of cyclical effects and cycle tracking and study participation raise awareness.

Unaware of cyclical effects. In most instances, participants reported that their menstrual cycle had no known effects on their alcohol use. Although previous themes suggest there is a cyclical effect, individuals were not consciously aware of this. Leanne suggests this in the quote below as she states she drinks when she wants to without reference to the menstrual cycle. Similarly, Pan says how she has not noticed any relationship between alcohol use and the cycle and does not think that there is a relationship.

I don't think I really pay much attention, I just kind of drink . . . If I'm at an occasion when people are drinking, I will just drink to just go with the flow. (Leanne – 23, HC)

I've not really noticed that socially. I don't think it would affect me, or that I've noticed anyway. (Pan – 27, HC)

Cycle tracking and study participation raise awareness. Those who reported tracking their menstrual cycles demonstrated more awareness of cyclical changes in behavior compared to those who did not. Additionally, those who had previously taken part in a study on alcohol use and the menstrual cycle said that as a result of participating, they were now more conscious of shifts in behavior and mood and had been motivated to continue tracking their cycle. This provides a useful insight into raising awareness of shifts in alcohol consumption. We see in this quote that Patsy acknowledges the utility of period tracking as a tool to learn about herself. Nichola also says that she has become more aware of her moods as a result of cycle tracking after participating in a previous diary study. Finally, Katie states how she started tracking after participating in the previous study and encourages the use of other people as it is a tool to understand oneself better.

I use a tracker, I'm starting to, just because it's like a nice little . . . So it's no longer a fun surprise but that's quite nice to start to see a pattern and I feel like I can learn more about it. (Patsy – 27, NC)

I think it was a study that triggered me to get a daily tracker app, so I think I've just been more self-reflective on my mood but in a more holistic way. (Nichola – 29, NC)

I think what [researcher] already did from the last study, if I hadn't have had a period tracking app, [researcher] introduced me to one, which is so beneficial to anyone and I think anyone with a smartphone that is a woman should have the app to understand your body a little bit better. (Katie – 22, NC)

Research aim two: considerations for research

Menstrual literacy

This theme addresses how important menstrual literacy is for researchers to consider. Only those who have a sufficient understanding can provide more accurate data for research. The theme consists of three subthemes which explore what affects literacy and how to consider this in the future research. These are as follows: inadequate education, self-education, and resources for study participants.

Inadequate education. All participants reported that they had received inadequate education about the menstrual cycle at an early age. This was the case for information/education regardless of source, e.g., school, caregivers, friends. In the context of alcohol use, this is particularly important as if individuals are unaware of cycle phases, they may not be able to distinguish changes in behavior related to the cycle. Below, Yiovi reports on how her education was minimal and came too late given she had already started her periods. Kat further explores this education, stating that she was taught about the menstrual cycle from a biological perspective only.

I think it was very, very briefly. It was then when we got to secondary school and did PSHE there that I remember we all got boxes of sanitary items and then we talked about things. But by that point I had already got my period. (Yiovi – 23, NC)

I think I first knew about a period when I was probably like, 13. But I don't think it was explained to me as well about what was actually happening, it was just something that happened. And then I did biology in secondary school, so I think that plugged some of the gaps in my knowledge. But yeah, I don't remember anyone ever explaining to me like, the menstrual cycle in its entirety. (Kat – 25, HC)

Self-education. Building on the previous subtheme, most individuals reported that they had learnt a lot of their menstrual education independently over time. The internet was the primary resource for self-education; however, there was acknowledgment that they did not always feel as though the information was from a reliable source. For example, Noreena explains that it was through reading books about menstrual cycles that she acquired the knowledge to understand what she was experiencing. Self-education can be problematic at times for example, Anouska states that the internet gives such a breadth of information that it can become overwhelming. Again, this is an important factor for researchers as cycle knowledge is important when researching how the cycle affects behavior.

It was through books, because I lost my period for two years, so I was reading up loads on how to get it back and I think bought four million books on everything to do with periods to try and teach myself in order to keep my period, when I got it back eventually. (Noreena – 19, NC)

I think I did my own research about it and that's when I think I became more scared about it because the internet gives it in way more detail and at that age it's a bit scarier. (Anouska – 23, NC)

Resources for study participants. Narratives also explored the idea that it would be useful for researchers to provide participants with menstrual education at the end of participation. There was an acknowledgment that researchers could not provide this before participation due to the effects this may have on the study. Although this is not directly linked to alcohol, it is a good suggestion for future research to enhance participants' experiences. Victoria emphasizes this in the quote below, saying that the information would be useful, particularly for those who may not have had the opportunity for good menstrual education. Interestingly, Ann states she would have

liked more information on the biological underpinnings following participation in research.

But it would be really cool to have that information offered afterwards, especially if you are targeting groups which maybe haven't had the level of education that others might, to give them that information and signposting afterwards would be a really nice benefit to the participant. (Victoria – 26, HC)

I, personally, would be interested more on the biological processes. I think talking about it like this kind of makes me more curious and that's the kind of information that I would like to have after doing this, I guess. (Ann – 25, NC)

Healthcare provision

This theme developed as individuals reflected on their experiences of health care and how this affects their education. Again, this is an important consideration for research as these experiences shape individual understanding and awareness of the menstrual cycle and its effects. The theme consists of two subthemes: contraceptives education and inconsistencies in healthcare.

Contraceptives education. Most early experiences of healthcare regarding the menstrual cycle were to start using contraceptives for a variety of reasons, including to manage menstrual symptoms. However, participants reported that they were not fully informed of the effects of contraceptives or the mechanisms of action in most cases. Here, Anouska states that she was not fully informed when she went to the doctor's to get hormonal contraception. Additionally, Leanne states that she is unsure of how hormonal contraception works and that she just follows instructions on how to take it. Like menstrual knowledge, contraceptive knowledge should also be considered by researchers when drawing on menstrual experiences.

Felt very rushed, the doctor's appointment felt like oh we are just putting another teenager on the Pill. Didn't talk about any other types of contraception that they could have put me on or anything that would help hormones without the Pill, different ways that I could have helped that, it was just straight on ... well, what I thought was the cheapest pill. (Anouska – 23, NC)

I actually really don't know. I just know that when I take it, it will stop me bleeding and then when I stop taking it, I'll have a withdrawal bleed for seven days. But I don't know how it works; I just take it. (Leanne – 23, HC)

Inconsistencies in healthcare. This subtheme showed how different healthcare experiences were for individuals. For example, some healthcare professionals would try to educate and explain healthcare options, whereas others were pragmatic. Additionally, the information provided varied, and individuals were aware of inconsistencies both within their own experiences and in comparison, to the experiences of others. For example, Ann states that she had an appointment with an experienced nurse who explained contraception to her, whereas Eileen had two appointments, the first with a doctor who did not explain her options followed by one who did.

To be fair, I don't know about everyone there but the nurse I spoke to seemed a lot more knowledgeable, I guess because it's her specific

area. But she seemed to know a lot more and she knew what to recommend that I took instead, that kind of thing. (Ann – 25, NC)

I saw a different doctor. Their perspective was so different, and they kind of . . . because I wasn't happy with that pill, they talked me through more options that I could have, even like implants and stuff like that, which there was no consideration from the first doctor, it was just there are two pills that I could have. (Eileen – 22, NC)

Research topics

The final theme was formed as a result of participants' misinterpreting the question "what should researchers consider when investigating the menstrual cycle?" Rather than factors to include in research (the researcher's intended meaning), individuals explored topics that researchers should study. The theme consists of two subthemes: individual differences and inclusivity and lifestyle.

Individual differences. Regarding considerations for researchers, it is important where possible to measure variables related to the research question as it may affect results. In this study, the participants highlighted that it is important to consider individual differences, although this was not explicitly stated with reference to research. It does though have implications for research. Here, Lisa and Florence explicitly state the importance of gaining knowledge through discussing cycle differences.

There was a few in the symptoms one, I can't remember exactly what they were. I was like people have experienced this regularly as part of their menstrual cycle. I had no idea. So, I think I kind of learnt more about the ways people's cycles can differ between people. (Lisa – 23, NC)

I think it's just realising that every woman is completely different and is an individual, so every individual is going to be different. (Florence – 21, NC)

Inclusivity and lifestyle. The final subtheme is for research to ensure it is inclusive for example, considering sexuality and gender. Additionally, similarly to individual differences, lifestyles (such as experiences of menses after children and being environmentally conscious) should also be considered as they may influence the results in menstrual studies. Yiovi explains that being gay has given her a different, more positive experience and Zinnia explains the lifestyle factor of sustainability when considering menstrual products.

not that everyone I've dated is someone who menstruates but it just, yes, makes it much easier to talk about and talk about things like period sex and those kind of quite taboo topics, they just aren't an issue at all, which I feel very lucky about and when I talk to my straight friends it's not always the same experience. (Yiovi – 23, NC)

I've recently bought a menstrual cup as well and, again, that was . . . So one of my friends is natural cycling as well and bought a menstrual cup, because we're both quite environmentally conscious. (Zinnia – 27, NC)

Discussion

The current study was the first to explore and revealed a unique insight into the lived experiences of the menstrual cycle in relation to alcohol use, as well as highlighting how

research into the menstrual cycle should be conducted. No existing research has explored this, and most qualitative research into the menstrual cycle has generally focussed on menstrual irregularities and disorders. This study provides insight into whether individuals are aware of changes in alcohol use and drinking motives over their menstrual cycles in those with typical patterns of menstruation. These findings are important for researchers in the field and highlight important implications for menstrual education.

Existing literature that has explored the association between menstrual cycles and alcohol use (Warren et al., 2021; Brown et al., 2008; Hoffmann et al., 2024; Mello et al., 1990) has suggested that there is mixed evidence. However, none of these studies considered whether individuals are conscious of any experience of their menstrual cycle affecting alcohol use. In the current study, individuals reported reduced consumption of alcohol during menses. Yet, they reported not being conscious of any fluctuations in any other parts of the cycle. This is interesting as previous literature has found increases in alcohol use during the follicular phase (FP; between menses and ovulation; Warren et al., 2021; Hoffmann et al., 2024). This is important, as with any unconscious fluctuation in behavior, if alcohol use becomes problematic at certain cycle points, this should be considered by healthcare providers.

Additionally, Müller et al. (2021) reported sex-specific motives for alcohol consumption in those with AUD as well as controls. Furthermore, Joyce et al. (2018) found that motives fluctuate cyclically with socializing motives peaking during the FP. Interestingly, their findings also reported an increase in drinking to cope during the luteal phase (LP; between ovulation and the start of the next menses). This was also reported in the present study as individuals reported drinking to cope with PMS, which occurs both in the LP and early days of menses, as well as reporting social motives. The coping and social motives fit with existing motivations for alcohol theories which state that alcohol is used for both positive and negative reinforcement (Cox & Klinger, 1990; Cox, 1998). However, the theme drinking motives were the least agreed with when checked with participants of the study. This could be a result of drinking motives being individual-specific, which suggests it is not a general pattern for all individuals. Overall, the present study would suggest some awareness of alcohol use during menses when prompted to reflect, but not across the whole cycle. This could be explained due to the lack of awareness of the menstrual cycle phases.

Inadequate menstrual education was found to be a prominent subtheme in the study. This lack of menstrual knowledge may help explain why individuals were not consciously aware of fluctuations in alcohol use across their cycle. As discussed earlier, it is hugely important to educate individuals about this to promote healthier views about menstrual cycles and menses (Richardson et al., 2018). Without sufficient education, individuals are more likely to have negative views toward menses and hold stigma and taboos (Richardson et al., 2018).

This is particularly pertinent given this study involved a Western sample who were relatively highly educated, yet their menstrual literacy was still limited. In the UK, educational practice has changed over the last 20 years with greater inclusion

of menstrual cycle information. However, as in this study, it is often still reported as insufficient (Schmitt et al., 2021). The importance of school education as a method of providing standardized knowledge across geographical and socioeconomic demographics is paramount. It has the potential to shape people's view of the cycle and menstruation practices (Richardson et al., 2018). Education interventions should include more detail about what a menstrual cycle is; the fluctuations in psychology and physiology over a menstrual cycle; and the role and mechanisms of hormonal contraceptives.

It is not just schools that must provide this education but also healthcare professionals. The narratives in this study highlighted that individuals experience inconsistent health support, with some healthcare professionals providing detailed information to patients, whereas others were dismissive and uninformative. Again, without education from healthcare professionals, people who experience periods are unjustly let down about an important aspect of their health which has the potential to be passed down through generations. In practice, healthcare professionals could be trained to educate as well as treat individuals in their care. Additionally, it is an important consideration for researchers to not assume menstrual literacy.

Research into menstrual cycle experiences is important for providing our understanding to inform both education and healthcare. The findings presented highlight the importance of individual differences in research. Qualitative research inherently takes individual experiences into account. As such, it is important to consider initial qualitative exploration before investigating associations and relationships with other behavioral factors quantitatively. As for other factors to consider within menstrual cycle research, these findings emphasize that lifestyle and intersectional factors are also important to consider, including gender. Previous research has shown how experiences of the menstrual cycle can be influenced by gender for example, those who are trans-male can feel more disconnected from their bodies (Schwartz et al., 2022). Future research should therefore ensure that the methods capture a comprehensive number of factors, which are related to both the menstrual cycle and the other behavior/s researchers wish to investigate.

There are several limitations of the current study to consider. Firstly, there is potentially recall bias in the current study; most individuals can only reflect on the experiences of menses without recalling other distinct cycle phases. Only longitudinal testing would allow the capture of experiences at other cycle points. Secondly, selection bias is another limitation as those who took part is willing to talk about a topic which is considered by many as taboo. Finally, having a subset of participants who had previously taken part in the longitudinal study serves as both a strength and a limitation. These participants were able to reflect on their experiences taking part and were able to offer insight into what future research could do. However, participation may have somewhat biased their responses.

Despite these limitations, the present study offers both practical implications and directions for future research.

More must be done to reform education about menstrual cycles, and it needs to be more comprehensive and delivered consistently between schools and healthcare professionals. Future menstrual research must consider menstrual literacy when providing instruction to participants and it would be good practice for them to provide information for participants at the end of the study. Finally, future research must also be considerate of individual differences and lifestyle factors.

To conclude, the current study aimed to qualitatively explore the association between alcohol use and the menstrual cycle, as well as provide considerations and recommendations for future research. It was reported that less alcohol is consumed during menses, due to the effects of alcohol and not wanting to socialize. For researchers, individuals expressed a need to consider how unique menstrual cycles are between individuals and to provide people with educational information upon completion of the studies. Additionally, menstrual literacy was reported as poor as a result of inadequate education and inconsistent healthcare. As such, better education and healthcare advice is needed, particularly on how the menstrual cycle affects key health behaviors. Finally, our findings suggest that there are some fluctuations in alcohol use across the menstrual cycle and that future research must consider individual differences and adopt longitudinal testing.

Disclosure statement

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