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Assessing menstrual equity amongst BAMER women fleeing gender-based abuse in Sheffield (UK): A cross-sectional study

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ABSTRACT

Objectives: Menstruation is not openly discussed in numerous Black, Asian, minority ethnic and refugee (BAMER) communities. Consequently, it is unclear if transitioning between cultures impacts BAMER women's menstrual health. This study aimed to evaluate menstrual equity and sanitary protection preference amongst BAMER abuse survivors displaced to Sheffield (UK).

Methods: Fifty participants were recruited from women's support services between December 2018 and May 2019. Selection criteria required participants to menstruate, identify as BAMER, be displaced, and have experienced gender-based abuse. Descriptive and inferential statistical analyses were performed using SPSS (IBM, USA) to assess menstrual equity.

Results: Many struggled to afford products (86 %), changed them infrequently (68 %) or improvised sanitary wear (40 %). Financially restricted women often changed products irregularly ($p = 0.02$) or used proxy items ($p = 0.02$). Participants disliked reusable pads (48 %) and vaginally inserted products (tampons 46 %, cups 78 %) without having tried them. Negativity surrounding reusable pads ($p = 0.01$) and cups ($p = 0.04$) was linked to menstrual taboo. Few women knew of menstruation prior to menarche (28 %). These participants were more likely to accept male doctors ($p = 0.04$), unlike those that regarded menstruation as taboo ($p = 0.02$), unclean ($p = 0.02$) or shameful ($p = 0.001$).

Conclusion: We provide key information regarding the menstrual health status of marginalised women. Our findings suggest limited menstrual-health education at menarche and negative belief-systems may compromise access to products and healthcare in adulthood. This study advises policymakers to unify distribution of hygienic absorbents and menstrual-health education to normalise menstruation, thereby reducing menstrual shame and empowering women to make informed sanitary protective choices.

Background

Menstruation is a natural bodily process intertwined with complex socioeconomic, religious and cultural issues. Even though there may be little knowledge of menstruation at menarche, it is a symbolic milestone that demarcates the transition from girlhood to womanhood [1]. As a result, it is often celebrated, even if shamed thereafter [2]. Fear of emergent sexuality can presage curtailment of education, marriage (sometimes forced or child marriage) and motherhood [3]. Ritual traditions imposed on menstruating females disproportionately affect Black, Asian, minority ethnic and refugee (BAMER) women [4]. Menstrual restrictions (such as limiting sexual intercourse, communal worship and food preparation) disempower women and stem from negative beliefs regarding cleanliness and purity [5].

Menstrual hygiene management (MHM) is a recognised issue for menstruators from lower-middle income countries and developing communities [6–8]. MHM describes access to sanitary protection and adequate washing, changing and disposal facilities [9]. The impact of relocating between diverse communities, cultures and socioeconomic settings on MHM remains unclear. In difficult situations menstruation is often neglected [8,9]. Displaced women can experience reduced access to sanitary products or private facilities, further intensified by language barriers or unfamiliar environments [8]. This might lead to changing sanitary products infrequently or proxy item use, which involves utilising items that are not designed for sanitary wear to stem bleeding (e.g. paper towels). Unsanitary practices can irreversibly compromise

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women's fertility (pelvic inflammatory disease) and risk their lives (toxic shock syndrome) [10]. This global health concern, coined 'period poverty', has become focal to European and particularly British political agendas [11]. In the UK, as a response, the value-added tax of sanitary products has been revoked, the 'Period Poverty Taskforce' established, and free sanitary provisions for schools and hospitals promised [2,12].

Since menstrual inequities are not classically associated with high-income countries, limited menstrual activism research is set in Europe, potentially resulting in overlooked populations. In the UK, displaced persons often have uncertain immigration statuses, limiting access to public funding, housing and healthcare, thereby increasing vulnerability to acts of violence, abuse or coercion. Several charities offer support through temporary housing, food banks and educational services, such as English classes and lessons providing advice on social integration, finances and asylum [13]. Our primary objective was to evaluate menstrual equity amongst BAMER abuse survivors in Sheffield (UK) using facilitated questionnaires. Secondary outcomes involved gathering information on sanitary protection preferences to inform public health intervention.

Methodology

Sheffield is an ethnically diverse city in South Yorkshire [14]; 16.3 % of its populace (552,698 inhabitants) identify as BAME: Black (3.63 %), Asian (8.03 %), minority ethnic or Arab (4.6 %). Participants were recruited from either their temporary housing (female-only refuges) or from the community-based services that charities provide to not just women residing at the refuges but also to a wider network of women who do not require temporary housing. These services were primarily English lessons, yoga and wellbeing classes and community outreach. These facilities provide a safe location for women to live, learn English and improve their physical and mental wellbeing.

Fifty participants were recruited from four sites [Fig. 1] using opportunity sampling from December 2018 to May 2019. A six-month period was required due to the narrow inclusion criteria and slow turnover over at the refuges (women could stay up to six months).

Inclusion criteria required participants to menstruate, identify as BAMER, be displaced, and have experienced gender-based abuse, such as, but not limited to honour-based violence, forced marriage, human trafficking and female genital mutilation. In accordance with the Modern Slavery Act (2015), victims of human trafficking for the purpose of sexual exploitation, domestic servitude, forced labour and debt bondage were included [15]. Self-identifying BAME women were either British-born, or more commonly, displaced to the UK. Those who originated overseas were asylum-seekers, refugees or migrants, whilst British nationals were internally displaced persons.

The 40-item multiple choice questionnaire [Appendix 1] was facilitated by the researchers and chaperoned by refuge staff (providing support and familiarity). For the safety of women housed at confidential locations their refuge worker (educated on gaining consent) facilitated the questionnaire. Only for those women who agreed to take part in the study, data was collected following written consent (disclosure section on questionnaire) by an all-female team (a researcher with a refuge worker) in a private space (e.g. side room) to maximise comfort. Due to the high turnover of refuge workers, it was not possible to capture the whole screening process and therefore, we could not estimate how many women refused to participate in the study and on which grounds they declined to take part. This study was approved by the University of Sheffield's ethical review board (Reference: 024066) in August 2018 and was conducted in accordance with the STROBE statement.

The questionnaire was developed with input from senior gynaecologists at Sheffield NHS Teaching Hospitals. Similar questionnaires were systematically reviewed, and sections adapted as needed as described by Hennegan et al [16]. The initial versions of the questionnaires were assessed for flow and readability as well as for comprehension and length of completion first informally and then under survey conditions. The final iteration of the questionnaire comprised five themes: 1) demographics, 2) menstrual cycles, 3) sanitary product and contraception preference, 4) menstrual poverty and 5) perspectives surrounding menstruation. To minimise language barriers, questionnaires were written and conducted in plain English alongside a product display [Fig. 2]. Language support services and translations (Farsi, Urdu and Arabic) were available.

Many women find menstruation shameful, therefore participation relied on anonymity. Consequently, a cross-sectional, observational study design was employed. Menstrual equity was assessed via a quantitative, closed-question questionnaire, and key themes identified. Each response was allocated a numeric code and subsequently analysed using descriptive and inferential statistics with SPSS Statistics (IBM, USA). Consistency checks were used to minimise data entry error. Continuous variables were assessed for homogeneity of variance with Levene's Test. Parametric data was assessed with *t*-test and ANOVA whereas non-parametric data was analysed with Mann-Whitney *U* Test and Kruskal-Wallis. Chi-square and Fisher's Exact Test were used to establish

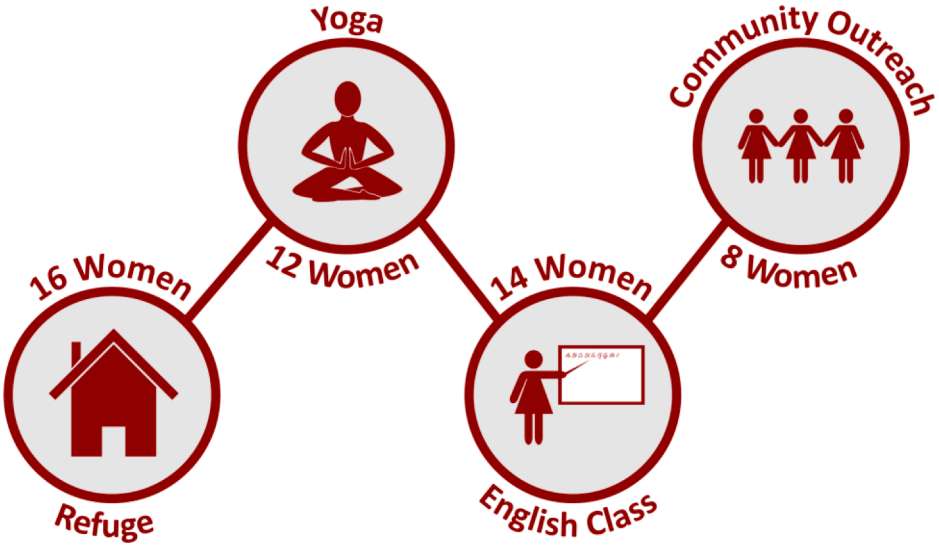

Fig. 1. Sample population. Proportion of participants recruited from each community-based location; refuges (n = 16, 32 %), yoga classes (n = 12, 24 %), English language lessons (n = 14, 28 %) and community outreach (n = 8, 16 %). ©Rahnejat, 2022.

Fig. 2. Menstrual hygiene management. Display of items used to absorb menstrual blood; non-applicator tampon, applicator tampon, soft tampon, panty liner, wingless-disposable sanitary pad, winged-disposable sanitary pad, reusable pad, reusable cup, tissue, newspaper, sock, cotton wool and cloth. ©Rahnejat, 2022.

correlation between categorical variables. P-values of ≤ 0.05 were considered statistically significant.

Results

Findings were grouped according to the five domains on the data collection tool.

Participant demographics

Fifty women met the inclusion criteria [Table 1]. Most participants were aged 25–39 (mean = 31.91, SD = 1.42, range = 16–50). The modal menarcheal age was 12 years. Most participants identified as Black (n = 20, 40 %) followed by Asian British (n = 12, 24 %), Asian (n = 9, 18 %) and White (n = 9, 18 %). Nearly all participants lived in Sheffield (92 %), whilst a minority resided elsewhere in South Yorkshire (8 %). Most women were homeless -defined as not having a permanent home- (30 %), lived in refuges (30 %), temporary housing (38 %), or on the streets (2 %). Only 30 % of participants resided at a permanent address, which included rented or owned property. Black women were more likely to live in refuges than any other ethnic group (p = 0.04), [Table 2].

Menstrual cycle

Participant's most frequently reported regular menstrual cycles (n = 27, 54 %) spanning 26–29 days (n = 19, 38 %) and menstruating 5–7 days (n = 26, 52 %). Menstrual flow was mostly described as medium (n = 25, 50 %) or heavy (n = 24, 48 %). Most women reported no gynaecological conditions (n = 36, 72 %). Amongst those who did, some disclosed uterine fibroids (n = 5, 10 %), polycystic ovary syndrome (n = 2, 4 %), menorrhagia (n = 1, 2 %) and endometriosis (n = 3, 6 %) or preferred not to share (n = 3, 6 %), [Table 1].

Sanitary product preference

To assess attitude towards sanitary products, participants were asked whether they had used specific sanitary products before and if their views were favourable.

Although participants liked disposable pads the most (n = 37, 74 %), reusable pads were viewed less favourably even amongst those who had tried them before [Fig. 3.a and 3.b]. Asian British women were more likely to view reusable pads positively (p = 0.03), whereas participants who regarded menstruation as taboo (p = 0.01) or unclean (p = 0.03) tended to dislike them even without having tried them before.

Vaginally inserted products were poorly received (n = 29, 58 % disliked). Participants disliked reusable cups (n = 39, 78 %) and tampons (n = 23, 46 %) without having tried them [Fig. 3.c, 3.d and 3.e]. Of the 36 % (n = 18) who reported previous tampon use, majority (n = 11, 22 %) reported they would use it again. Although none of the participants had used cups, some would be open to trying them (n = 11, 22 %), and most would be in a position to access facilities to sterilise them (56 %). Those who considered menstruation taboo were less likely to try cups (p = 0.04).

Most participants did not use contraception (n = 37, 74 %) or prescription medications relating to dysmenorrhea or menorrhagia, such as tranexamic acid (n = 42, 84 %). There was no association between contraceptive use and ethnicity (p = 0.79).

Menstrual poverty

Sanitary products were largely purchased from supermarkets (n = 30, 60 %) and pharmacies (n = 6, 12 %). Most women did not know where to access free products (n = 43, 86 %).The majority of participants struggled to afford sanitary products (n = 43, 86 %). These women were more likely to change products infrequently (n = 34, 68 %, p = 0.02) or use proxy items (n = 20, 40 %, p = 0.01).

Women residing in refuges were also more likely to improvise protective methods (p = 0.03). None of the participants reported toxic shock syndrome. However, a fifth of all participants (n = 10) disclosed gynaecological infections from proxy items (toilet paper, cotton wool and cloth).

Table 1
Participants' demographic and clinical characteristics.

Participant characteristics		n	%
Age (years)			
Mean [range]		31.91 [16–50]	–
Ethnicity			
White		9	18
Black		20	40
Asian		9	18
Asian British		12	24
Housing			
Permanent address		15	30
No permanent address		19	38
Refuge or Shelter		15	30
Living in the streets		1	2
Menstrual history			
Frequency of menses (peryear)	3–6	1	2
	7–9	4	8
	10–12	30	60
	13–15	8	16
	>15	6	12
	Unsure	1	2
Cycle duration (days)	<21	2	4
	22–25	12	24
	26–29	19	38
	30–34	5	10
	>35	2	4
	Irregular	1	2
	Unsure	9	18
Menstruation (days)	3–4	15	30
	5–7	26	52
	>7	8	16
	Irregular	1	2
Flow	Medium	25	50
	Heavy	24	48
	Medium-heavy	1	2
Regularity	Regular	27	54
	Irregular	14	28
	Hormonal contraception	1	2
	Unsure	7	14
	Prefer not to share	1	2
Gynaecological conditions	Fibroids	5	10
	PCOS	2	4
	Menorrhagia	1	2
	Endometriosis	3	6
	None	36	72
	Prefer not to share	3	6

n = number; PCOS= polycistic ovarian syndrome

Table 2
Association between ethnicity and housing.

Ethnicity	Housing (n =)				Total
	Homeless	**Refuge**	**Permanent**	**Street**	(n=/%)
White	1	3	4	1	**9 (18 %)**
Black	4	11*	5	0	**20 (40 %)**
Asian	2	4	3	0	**9 (18 %)**
Asian British	8	1	3	0	**12 (24 %)**
Total	**15 (30 %)**	**19 (38 %)**	**15 (30 %)**	**1 (2 %)**	**50 (100 %)**

n = number, *Chi-square < 0.05.

Perspectives surrounding menstruation and menstrual-related healthcare

Only 28 % of participants (n = 14) knew what menstruation was at menarche. Preceding menstrual knowledge was not significantly associated with menarcheal age or ethnicity. Less than half of women (n = 21, 42 %) felt comfortable seeking medical advice regarding menstruation, and fewer (n = 14, 28 %) if the doctor was male. Although not statistically significant, White women appeared most comfortable accessing healthcare irrespective of the doctor's gender (p = 0.69). Participants with prior menstrual knowledge at menarche were significantly more likely to approve of a male doctor (p = 0.04). Over half of the participants (n = 27, 54 %) advocated improved training for healthcare professionals treating BAMER patients. Women who regard menstruation as taboo (p = 0.02), unclean (p = 0.02) or shameful (p = 0.001) were most likely to support this.

Almost half the cohort associated menstruation with shame and secrecy (n = 24, 48 %). Although commonly reported amongst Asian women, ethnicity and menstrual shame were not dependent variables. Over half the participants considered menstruation taboo (n = 26, 52 %) and unclean (n = 25, 50 %). Those who regard menstruation unclean were more likely to have suffered an infection from proxy items (p = 0.04).

Discussion

Main findings

In our study, 86 % of participants struggled to afford sanitary products, 68 % changed them infrequently, and 40 % improvised sanitary wear. This high prevalence of menstrual poverty suggests that BAME and refugee communities may be more vulnerable to menstrual inequities than other groups in the UK.

We believe multiple factors can be held responsible for this menstrual inequity, and as suggested by our findings, these can be grouped into at least three categories: [1] limited access to sanitary protection and healthcare, [2] menstruation taboo, stigma and shame and [3] lack of prior menstrual health education (MHE) [Fig. 4].

Poor access to sanitary products and healthcare

BAMER women have reportedly been shown to have poorer access to healthcare and more adverse health outcomes [17]. Although official statistics are lacking, one UK-based survey in 2018 found that 10 % of schoolgirls in the UK were unable to afford sanitary protection, a further 14 % struggled, and 12 % used alternative items [11]. Even after the British Government introduced free sanitary products to schools and hospitals following this survey, BAMER populations did not directly benefit from these interventions as they require recipients to attend schools or hospitals [12].

Taboo, stigma and shame surrounding menstruation

In our study, half the participants reported feelings of taboo, shame and uncleanliness associated with menstruation. This is in line with current evidence linking BAMER communities with negative menstrual belief-systems [1,2,7]. However, whereas previous work has mostly focused on non-displaced BAMER or British women, our study adds a unique perspective into the matter by addressing the ideologies of displaced BAMER women living in a society which openly promotes menstrual equity.

Menstrual stigmas can exacerbate self-fulfilling prophecies. We found that women who regarded menstruation as unclean were most likely to acquire infections from improvised sanitary wear. Additionally, these participants were more likely to refuse a male doctor and advocate better training for healthcare professionals treating BAMER patients. We postulate that negative beliefs might hinder access to sanitary protection, resulting in women defaulting to non-hygienic methods, which precipitate infections. This reaffirms myths of menstruation being dirty and, along with reduced access to healthcare, can lead to sequelae such as infertility and marginalisation (in societies where women are primarily child bearers), [7].

There is also the added barrier of menstrual shame and perceived stigmatisation of ethnic groups which appear to precipitate a distrust of healthcare. In our study, participants who advocated greater diversity training for healthcare professionals were more likely to report feelings of taboo, shame and uncleanliness surrounding menses. We also noted low contraceptive use (20 %) compared with the UK-baseline (83.5 %), [18]. Interestingly, prior research suggests that women who perceive

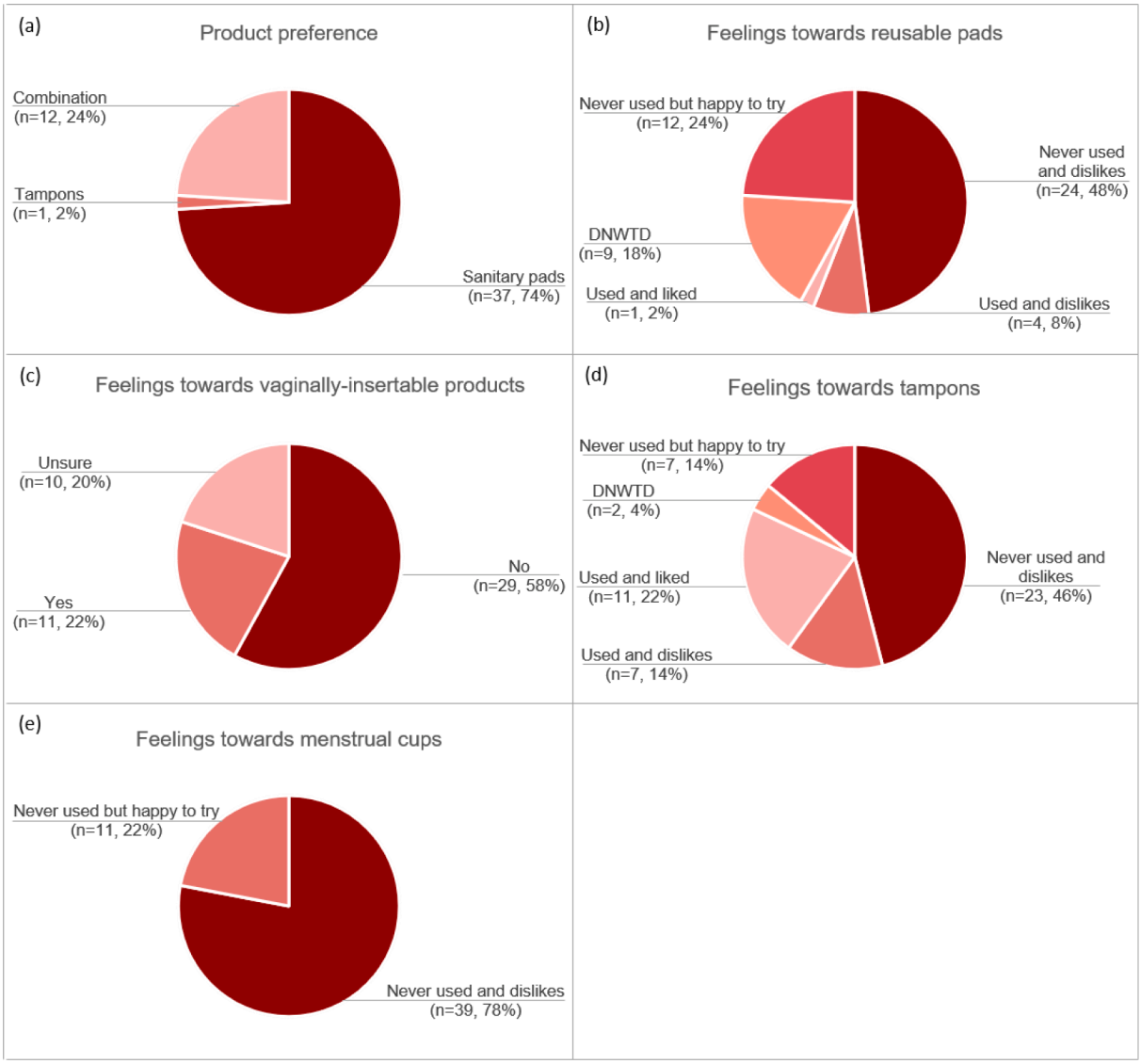

Fig. 3. Attitude towards sanitary products. (a) Product preference, (b) Feelings towards reusable pads, (c) Feelings towards vaginally-insertable products, (d) Feelings towards tampons, (e) Feelings towards menstrual cups. *DNWTC: does not wish to disclose.*

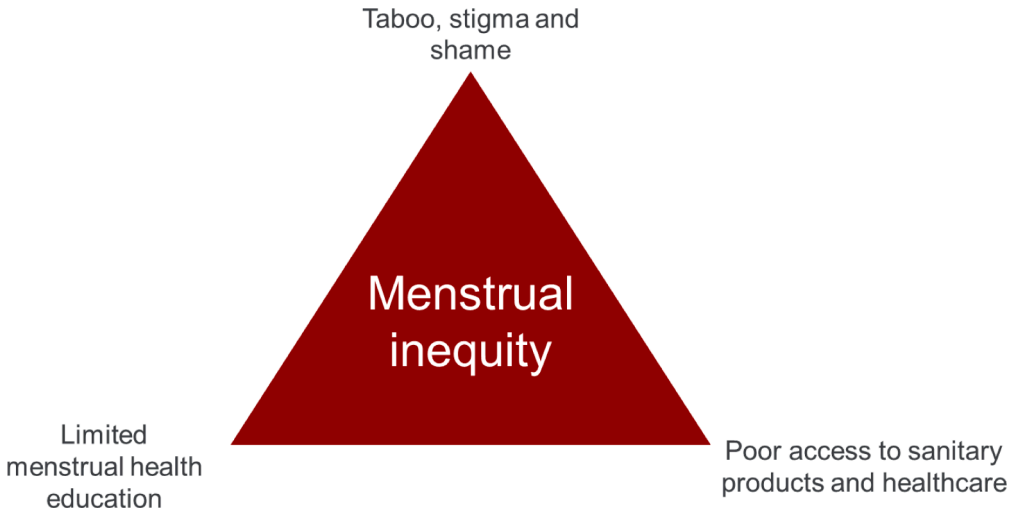

Fig. 4. Menstrual inequity. Parameters used to assess affordability, accessibility and safety of menstrual products.

menstruation negatively are more likely to inhibit it physiologically using contraception [19]. However, difficulties in obtaining prescription items (e.g. hormonal contraception requiring consultations) may explain the low uptake in our sample population.

Limited menstrual health education

Ethnicity also plays an essential role in the acquisition of knowledge, and development of attitudes and practice towards menstrual health [3]. Consistent with previous studies on BAME populations, we found that our participants had limited knowledge of menstruation prior to menarche [20,21]. Those with better understanding had learnt about menstruation from female elders rather than formal education. By contrast, previously surveyed British schoolgirls exhibited a high prevalence of prior menstrual knowledge attributable to widespread school-level education [11].

Maternal attitudes are vital to shape girls' early menstrual experiences and evolving beliefs with positive menarche linked to early MHE [22]. Without prior knowledge, girls commonly associate their periods with fears of death and develop avoidance behaviours towards the subject. Not surprisingly, in our study, participants with prior knowledge of menstruation were more comfortable discussing menstrual health with male doctors. This indicates that early MHE may normalise menstruation, leading to better access to gynaecological healthcare and a reduction of gender-related stigmas.

Preferred methods for menstrual hygiene: Acceptability of vaginally inserted and reusable sanitary products

We also explored preferred methods for menstrual hygiene in our ethnically diverse cohort. Most participants preferred disposable pads and were less familiar with other products. Globally, disposable pads are also the most widely (and sometimes the only) available commercialised product [23]. Limited knowledge impairs the ability to make informed sanitary protection choices. Therefore, not unsurprisingly, we found that unfamiliar products were generally unacceptable with our sampled population. Many participants objected to try reusable and vaginally inserted products. We hypothesised that limited MHE, cultural acceptability, or a history of gender-based violence such as sexual trauma and female genital mutilation may also contribute to this reluctance.

Tampons can be contentious across religious contexts, with ethnicity influencing uptake [11]. Although we found no relationship between ethnicity and vaginally inserted protection, multiple studies link tampon use with White ethnicity [24,25]. Maternal and friends' attitude towards tampons has also been proposed as a strong predictor of use [26]. Since most of our participants had no knowledge of menstruation at menarche, there may have been little maternal or peer support regarding product choice. Moreover, if they held negative preconceptions of inserted products, or rarely used them, tampon use is unlikely to have been normalised. On the contrary, in line with the literature, we found that a good understanding of menstruation precipitated a positive attitude towards tampons [27].

Despite being available in most countries around the world, reusables are lesser-known alternatives to disposables [23]. Menstrual cups are favourable for resource poor settings because they cost-effectively combat menstrual poverty and are reported to be successful in situations with minimal water or privacy [28]. However, none of our participants knew of cups, with the majority disinterested in them. Reusables are rarely stocked in supermarkets (where 60 % of our participants in our study reported obtaining products) and cost more as a single purchase. This heightened initial expense may be a barrier to trying cups or organisations purchasing them for donation. They are therefore unlikely to be available from free sources. Similarly to tampons, studies report that women who experience menstruation negatively are likely to have a comparable view of cups [28]. Unfamiliarity and limited knowledge may explain why our participants were unwilling to try reusables despite having facilities to care for them whereas those with previous cup exposure received them positively.

We found that internal products were commonly described as 'unhealthy' or 'unclean' compared with disposable pads. This might stem from widespread media coverage of toxic shock syndrome (TTS), [29,30]. One study reports an epidemiological trend of increased tampon use prior to news reports of TTS, which led to a sudden increase in pad use in lieu of tampons [30]. Despite 40 % of our participants adopting unsanitary practices (20 % experienced infective sequelae) and cups being considered safe, cups were still viewed unfavourably [28].

Menstrual cups, and to a lesser extent tampons, require skill to insert and remove. This involves a degree of comfort for touching one's own body, which in itself may be culturally unacceptable [28,31]. In societies where female anatomy is largely considered sexual, there is likely to be poor pubertal education, precipitating unfamiliarity and discomfort manipulating internal products [32]. There is a lower prevalence of tampon use amongst virgins. Since vaginally inserted products penetrate this could be perceived as interfering with virginal innocence, with even a European demographic expressing concerns this could be synonym to 'losing virginity' [33,34]. Sexualising protection makes it embarrassing to discuss and stigmatises its use [31]. The size and shape of unfolded cups may be intimidating compared with tampons. Tampons can be placed using an applicator, removed by pulling a string, and discarded with waste -all steps which might distance contact with the body and blood. On the contrary, cups require folding for digital insertion and careful removal by a short stem to avoid spillage before discarding blood. Visually unabsorbed menstrual blood and sterilising cups may be perceived as messy or disagreeable by those who consider menstruation unclean [28]. Addressing concerns preventing women from trying reusables is key to addressing menstrual inequalities.

Strengths and limitations

Our study sought to better understand the menstrual beliefs and practices of an under-researched demographic of marginalised and minority women. Healthcare professionals and refuge workers should be aware that displaced women may originate from cultures where such items are not discussed, and therefore, their knowledge may be integral to dispelling myths and addressing concerns [17]. Cups and tampons used in our display were the first time many of our participants had seen these items. Menstrual equity can only be achieved through improving women's relationship with their own menses. We suggest that open discussion in well-supported groups with props may familiarise women with a range of products improving acceptability through normalising menstruation.

Our study does not come without limitations. Despite best intentions, consistency was not always guaranteed during data collection as questionnaires were facilitated by multiple researchers and/or refuge workers for confidentiality. Despite efforts to minimise language barriers, many participants were recruited from English lessons. Since English was not their primary language, it is conceivable that some deeper meanings may have been lost in translation. There is also a possibility of selection or volunteer bias, with women who were more sociable, communicative and comfortable discussing menstruation being more likely to be recruited from English or yoga classes.

Even though only fifty questionnaires were sampled, this was a considerable proportion of our population, and we believe sufficient to explore participants' values and preferences. Nonetheless, as no formal sample size calculation was performed prior to the study, type II error cannot be fully excluded for some associations. Moreover, employing a mixed methods study design would have generated further qualitative data for a more in-depth insight into our participants' expressed beliefs.

Our study populace contained ethnically diverse women (e.g. Nepalese, Somali, Iraqi, etc.) grouped under the umbrella label 'BAME'. Grouping cultural identities by ethnicity risks homogenising heterogeneous populations and over-generalising results to any particular ethnic

background. The same can be said for the blanket term 'gender-based abuse', which was used to encompass crimes against gender equality. It is therefore important to appreciate that our study group does not represent any particular belief of a single country or community; they are individuals united through circumstance. This broad inclusion criteria may suggest that our findings are not generalisable to any specific sub-demographic, however, they largely represent our international refugee community.

Lastly, the term 'sanitary' products may be considered archaic due to negative associations with cleanliness. However, since this terminology is well recognised, we used it in our questionnaire to minimise language barriers, and subsequently in our manuscript, to reflect the dialogue used with the participants.

Implications for further research

Although investigating less accessible populations poses significant challenges, we advocate that better understanding the menstrual health of women who transpose cultures, communities and socioeconomic demographics is fundamental to achieving menstrual equity. We suggest that future research focuses on evaluating the effectiveness of public health interventions in locations where women report accessing products once integrated into their local community. Currently across England free sanitary provisions are limited to schools and hospitals. We propose unified distribution of hygienic absorbents and education-focused interventions to more widely accessible locations (e.g. supermarkets and pharmacies), normalising the variety of products available, thereby reducing menstrual shame by empowering women to make informed sanitary protective choices.

Conclusion

Menstrual inequity is still quite prevalent in BAME and refugee communities within high-income countries. Barriers to accessing free sanitary products and healthcare, along with widespread feelings of menstrual shame highlight the need for inclusive interventions, holistic training of healthcare professionals and consideration of the cultural context of BAMER women. Only through constructive dialogue and involvement of key societal players will the sexual and reproductive needs of the most vulnerable communities be met.

Authorship

The first author, Katherine Rahnejat, is responsible and accountable for the research. She proposed and designed the study and survey instrument, gained ethical approval, collected and analysed data, and wrote the final manuscript.

The senior author, Brenda F Narice, made substantial intellectual contributions as scientific advisor. She critically reviewed the study proposal and ethical proposal, oversaw development of the questionnaire, led data analysis, critically reviewed findings and approved the final manuscript.

Ethical approval

Written consent was documented prior to data collection (disclosure section on questionnaire). The study was approved by the University of Sheffield's ethical review board (reference: 024066) on December 19th, 2018.

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Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [KR and BFN declare this manuscript is their own research and in no part plagiarised. There is a potential conflict of interest for KR as founder and Chair (unpaid position) of Menstruation Matters; a UK-registered charity (established after completion of the study) to provide free sanitary products and menstrual health education in South Yorkshire].

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