The Experience of Menarche for Young People With Sensory and Motor Impairments: A Systematic Review

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Article history: Received February 17, 2023; Accepted August 8, 2023

Keywords: Child; Female; Adolescent; Menarche; Menstruation; Review

ABSTRACT

Young people with disabilities may face barriers to optimal management of menstrual health, including the management of menarche, a unique stage of development. This systematic review examined the barriers to and facilitators of a positive experience of menarche for young people with visual, hearing, or mobility impairments. The MEDLINE, Embase, PsychINFO bibliographic databases, and grey literature were systematically searched in February 2022 to identify relevant research. Thematic synthesis of the extracted study findings was undertaken, using a team-based approach. A total of seven primary qualitative, and 1 mixed method studies were eligible for inclusion. The themes identified through metasynthesis were: timeliness of pre-menarcheal access, with many being unaware of menarche before it occurred, leading to fear and shock at their first period; resonance, with individuals reporting positive impacts of guidance from those with similar disabilities; and frame, the impact of surrounding societal narratives on the experience of menarche. Families, and those involved in the care of children with visual, hearing, and mobility impairments should be made aware of the importance of timely and resonant menarcheal support and guidance for these individuals and of broadcasting positive surrounding narratives of menarche. This should enable a positive experience of menarche for these vulnerable young people, supporting a good trajectory for later-life menstrual health.

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Despite the importance of this developmental milestone, there remain evidence gaps around the facilitators of positive experiences of menarche. This is particularly true for those living with the burden of chronic health conditions or disabilities. The global prevalence of physical disability is unclear, but it has been reported that the prevalence in England is around 17% [13]. More than 1.5 billion people across the world have hearing loss, with 430 million having disabling hearing loss [14]. There is uncertainty around the age and sex distribution of disability globally, but of the 2.2 billion people worldwide with visual impairment [15], 43.3 million are thought to be blind, and of those, approximately 23.9 million are female [16].

An understanding of the determinants of a positive or negative experience of menarche for children and young people living with disability is necessary to inform interventions aimed at improving this aspect of menstrual health.

Aim

The aim of this systematic review was to identify the barriers and facilitators of a positive experience of menarche in young people with sensorimotor (hearing, visual, and mobility) impairments in order to develop recommendations for supporting menarche in these young people. The review results are reported in alignment with the ENTREQ (enhancing transparency in reporting the synthesis of qualitative research) guideline [17].

Method

Search strategy and information sources

A preplanned systematic review was undertaken. The MEDLINE, Embase, and PsycINFO bibliographic databases (chosen to deliver a comprehensive search of available qualitative literature) were searched from database inception to 24th February, 2022 (full details available in Appendix A1), and a systematic search of the grey literature was undertaken on 28th February, 2022 [18,19].

Eligibility criteria

Studies eligible for inclusion comprised those that (1) included primary research, and (2) involved qualitative or mixed methods investigation of the lived experiences of menarche (either self-reported or carer-reported) for those with vision impairment, hearing impairment, or mobility impairment. Studies were excluded if they were unavailable in English or did not describe study methodology in sufficient detail (as agreed by consensus by two reviewers) to allow critical appraisal. Studies that only included personal experiences of individuals with intellectual disability with or without sensory or motor impairment(s) were also excluded in order to ensure analysis of themes pertaining to the specific target impairments and in recognition of the likely distinct needs of the vulnerable population of young people with intellectual disability.

Study selection

Two reviewers screened results from the database search independently according to the eligibility criteria. This was done via title and abstract in the first round of screening, and then by full text in the second round of screening. Conflicts between the two researchers were resolved by the senior reviewer (A.L.S.). Data management for the review was undertaken using the Cochrane Groups’ Covidence and Rayyan platforms [20]. One author (T.R.S.) screened the findings from the grey literature search for selection, and data were extracted from the full texts of these articles by both reviewers. Two authors also screened citations from eligible studies in order to identify further eligible studies.

Data extraction

A data extraction sheet was devised (Appendix A2), informed by the Cochrane guidance on extracting qualitative evidence [21], before full texts were screened. Data extraction was performed independently by the authors and then reconciled. Extracted information comprised reported data on expectations or knowledge around menarche; sources of information and support; perceptions of menarche and menstruation; barriers and facilitators of a positive experience; and practical recommendations or suggestions for change.

Quality assessment

The risk of bias and strength of evidence were assessed by independent reviewers using the Critical Appraisal Skills Programme (CASP) checklists [22]. These checklists assess the clarity of the statement of the aims of the research, the appropriateness of a qualitative methodology, the specific research design, and the recruitment strategy; whether the data were collected in a way that addressed the research aim; whether the relationship between researcher and participants had been adequately considered; and whether ethical issues had been taken into consideration, the rigor of data analysis, the clarity of the statement of findings, and the value of those findings. The quality of evidence for each of these 10 criteria was rated as being good, poor, or unclear. Each study was then rated overall as being of good (five or more criteria judged as good outcomes and none as poor), neutral (overall four criteria judged as good or only two as poor) or poor quality (overall fewer than four criteria judged as good or more than two judged as poor). When discrepancies were identified following a independent assessment of quality, they were discussed, and the final decision was made by the senior clinician. We did not exclude studies on the basis of quality ratings.

Analysis

A thematic analysis approach was undertaken for metasynthesis. This approach was selected as a systematic, comprehensive literature search was considered necessary due to the potentially small number of eligible studies within this area of research need. Also, thematic metasynthesis would result in analytical themes that offered new interpretations beyond the findings of the original studies [17]. Firstly, data from eligible studies were inductively coded line-by-line into descriptive themes. These themes were then organized into categories through a conceptual framework developed iteratively by the reviewers. We undertook iterative synthesis to explore the relationships across the themes and categories in order to develop the main descriptive themes. These themes were then used as the basis for recommendations for professional and family caregivers. Recommendations derived from the evidence
synthesis were judged to be strong when the quality of the evidence was good, there was a clear absence of undesirable consequences, and there was no evidence of substantial variation or uncertainty in values and preferences within the relevant population.

When quoting studies, the wording of the authors was used to provide continuity and clarity, however, elsewhere, as not all people who menstruate define themselves as female, populations were referred to as ‘people who menstruate’, ‘participants’, or ‘menstruators’.

Results

Eight studies reporting findings from qualitative or mixed-methods research were selected for inclusion (Figure 1). Two studies were identified through the search of grey literature (both sources were published PhD theses, and both were also identified through searching for citations). The details of the papers for which there was reviewer disagreement on inclusion prior to a consensus decision to exclude them are provided in Appendix A3.

Description of included studies

A total of 785 participants resident in eight countries across Europe, Asia, and Australasia were included in the eight eligible studies. Table 1 presents the key characteristics of the eight included studies. Four of the eight studies involved participants with visual impairment [23–26], three with hearing impairment [24,27,28], and three with mobility impairment/issues [24,29,30]. The ages of participants sampled ranged from 15 years [26,29] to 73 years [27]. This allowed for experiences of menarche to be recorded for time periods decades before the study was conducted. All studies found were carried out in the past decade, with the earliest one carried out in 2012 [28]. Ethnicities of participants were often not recorded. Only one study investigated experiences of people with all the disabilities relevant to this review [24].

Quality assessment of included studies

Of the eight studies, seven were judged to be of good quality (Appendix A4). The most common limitation was the use of purposive and snowball sampling (in four of the eligible studies). This recruitment approach tends to result in participants known to the researchers. The study population is therefore not selected at random from the wider population of interest, and may be biased toward those who would give more positive responses. However, these populations may also be more willing to disclose, enriching the findings from these studies. One study received a ‘neutral’ judgement primarily due to the absence of analysis or synthesis of qualitative data collected during a ‘mixed-methods’ study, with investigators instead using respondent quotes to illustrate findings from quantitative analysis [25].

Thematic analysis

The three key thematic categories that emerged were ‘timeliness’, ‘resonance’, and ‘frame’ (Figure 2). These were all centered on the characteristics of the direct or indirect communications on menarche received by the child or young person and
Table 1
Key characteristics of studies included in this systematic review

<table>
<thead>
<tr>
<th>Author</th>
<th>Country &amp; income group</th>
<th>Year</th>
<th>Number of participants</th>
<th>Age (yrs)</th>
<th>Ethnic groups</th>
<th>Impairment studied and study aim</th>
<th>Recruitment method</th>
<th>Study type</th>
<th>Information extraction method</th>
<th>Analysis approach</th>
<th>Quality</th>
<th>Study findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>McGregor et al. [23]</td>
<td>Australia - High</td>
<td>2020</td>
<td>6</td>
<td>16–70</td>
<td>Not mentioned</td>
<td>Visual Aim: How do women with VI self-manage and what do they recommend occupational therapists incorporate in education?</td>
<td>Purposive and snowball sampling</td>
<td>Qual</td>
<td>In-depth semi-structured interviews</td>
<td>General qualitative approach</td>
<td>Good</td>
<td>The themes that arose were (1) Person factors: eg. Knowing when a period is due, Choice of pads and/or tampons, Knowing when to change a pad or tampon. (2) Occupation factors: Positioning sanitary pads, Identifying and managing leaks, Identifying and buying sanitary items. (3) Environment factors: Navigating public bathrooms</td>
</tr>
<tr>
<td>Wilbur, Morrison et al. [24]</td>
<td>Vanuatu - Lower-middle</td>
<td>2019</td>
<td>Qualitative:12 Quantitative:346</td>
<td>18–45</td>
<td>Not mentioned</td>
<td>Visual, Hearing and Mobility Aim: to describe menstrual health experiences of people with and without disabilities in an LMIC</td>
<td>All households in region invited</td>
<td>Mixed-methods</td>
<td>Structured questionnaires/ interview/ observation and PhotoVoice</td>
<td>Iterative analysis</td>
<td>Good</td>
<td>Menstrual stigma and inadequate water and private bathing facilities at home impacted all menstruators in the sample. Menstruators without disabilities who lived in urban areas had more positive menstrual experiences, partly because they had greater access to resources at home. Experiences were far worse for menstruators with disabilities compared to menstruators without disabilities.</td>
</tr>
<tr>
<td>Dundar et al. [25]</td>
<td>Turkey - Upper-middle</td>
<td>2017</td>
<td>187</td>
<td>16–53</td>
<td>Not mentioned</td>
<td>Visual Aim: to determine the MHM among visually impaired women</td>
<td>Purposive sampling</td>
<td>Mixed-methods</td>
<td>Telephone interview</td>
<td>Descriptive statistics</td>
<td>Neutral</td>
<td>MHM of the women were not at desired levels. The women had the most difficulty in determining the start and end of menstruation. They received support for this issue and used some indicators of their own to determine the start or end. One out of two visually impaired women received support for MHM. Approximately one-fifth had difficulty during pad changing and nearly half of them could not manage their menstrual period independently.</td>
</tr>
<tr>
<td>Skandhan et al. [26]</td>
<td>India - Lower-middle</td>
<td>2018</td>
<td>110</td>
<td>15–24</td>
<td>Indian</td>
<td>Visual Aim: to determine the effect of visual impairment on menarcheal age</td>
<td>All students in selected schools</td>
<td>Mixed-methods</td>
<td>Questionnaire, read out by the teacher in the blind school</td>
<td>Descriptive statistics</td>
<td>Good</td>
<td>Menarcheal age was reported as occurring 9 months earlier in girls who were blind. The majority were unaware of menstruation prior to menarche. Knowledge was received from mothers for the majority, and from female relatives or teachers for the rest.</td>
</tr>
<tr>
<td>Meehan [27]</td>
<td>Ireland - High</td>
<td>2019</td>
<td>29</td>
<td>23–73</td>
<td>28 white, 1 non-white (not specified)</td>
<td>Hearing Aim: to describe how deaf women experience and understand their intimate lives</td>
<td>Purposive sampling</td>
<td>Qual</td>
<td>Semi-structured interviews, focus group, in-depth interviews</td>
<td>Thematic and comparative analysis</td>
<td>Good</td>
<td>Deaf women are positioned through an ableist lens as ‘vulnerable’ at discursive and policy level. Attaining more information on sexual and reproductive health ameliorated confusion and negative experiences. The need for improving formal pathways of sexual knowledge building across different dimensions of learning from menarche to contraception was identified.</td>
</tr>
<tr>
<td>Author</td>
<td>Country &amp; income group</td>
<td>Year</td>
<td>Number of participants</td>
<td>Age (yrs)</td>
<td>Ethnic groups</td>
<td>Impairment studied and study aim</td>
<td>Recruitment method</td>
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<td>Study findings</td>
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<tr>
<td>Prior [28]</td>
<td>New Zealand (NZ) High</td>
<td>2012</td>
<td>7</td>
<td>23–47</td>
<td>4 NZ European/ Pakeha; 2 Pacific Island; 1 Southeast Asian</td>
<td>Heating Aum: to explore the accounts of sexuality-related experiences and knowledge of a group of Deaf women</td>
<td>Advertised via Deaf Association New Zealand</td>
<td>Qual</td>
<td>Focus groups</td>
<td>Comparative analysis</td>
<td>Good</td>
<td>Sexuality knowledge and development was impacted by family cultural background, the ability of those around them to communicate through Sign Language, and their personal English literacy levels. Those who had greater access to information and support reported more positive experiences.</td>
</tr>
<tr>
<td>Wilbur, Kayastha et al. [29]</td>
<td>Nepal Lower-middle</td>
<td>2017</td>
<td>20 people, 13 carers</td>
<td>15–24</td>
<td>Not mentioned Mobility Aum: to investigate barriers to MHM that people with disabilities and their carers face</td>
<td>Purposeful sampling</td>
<td>In depth interviews; observation; PhotoVoice</td>
<td>Qual</td>
<td>Thematic approach</td>
<td>Good</td>
<td>The barriers to MHM are complex and differ according to the person’s impairment. They include use of menstrual aids, and pre-and postmenstrual symptoms. There is inadequate menstrual hygiene information, training and support. These barriers have negative impacts on their physical, emotional, mental and social wellbeing, and inhibit the person’s ability to fulfil their human rights, eg education.</td>
<td></td>
</tr>
<tr>
<td>Power et al. [30]</td>
<td>Bangladesh Lower-middle</td>
<td>2018</td>
<td>12 people, 33 female caregivers</td>
<td>30–38</td>
<td>Not mentioned Mobility Aum: to determine (a) how do young adolescent women discursively construct their menstrual experiences and needs, and (b) what are the experiences and meanings applied by their mothers in providing menstrual support.</td>
<td>Invites to all on the Bangladesh Cerebral Palsy Register</td>
<td>Semi-structured focus groups</td>
<td>Thematic analysis</td>
<td>Good</td>
<td>The themes identified were (1) Menarche as a gateway to information; (2) Menstruation as a sign of female maturation; (3) Independence and support needs; (4) Menstrual symptoms and an imperative to endure quietly and (5) Menstrual regulation. There was a complex picture of learning about and navigating the materiality of menstruation alongside restrictive discourses of ‘maturation’, and ‘quiet endurance’.</td>
<td></td>
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</table>

LMIC = lower- and middle-income countries; MHM = menstrual hygiene management.
the environment in which the communication was delivered. Multiple sources of information on menarche were reported across the identified articles. The data extracted for this analysis and the organization into themes and embedded subthemes are detailed in Appendices A5 and A6. Studies consistently reported that the most common sources of information and support were mothers or older female relatives [23,25–30]. Health care professionals were also described as a source of information and support [25]. Teachers and other education professionals were seen as reliable secondary sources of information [25–28], and young people also described looking to peers for information on menarche [23,26,27].

Timeliness. Education delivered prior to menarche, in the form of discussions with parents, friends, or others, as well as from written sources, was reported as a facilitator of a positive experience of menarche for menstruators. This education allowed participants to stay calm when menstruation began and to feel confident that they knew how to deal with it appropriately. This is illustrated by the following quotes: “When xx achieved menarche, she calmly thought to herself at the time, ‘It’s ok, this is what mum’s gone through. I’m growing up a little bit more. It’s ok’” [28], and “My Mam, mother, told me how to use it [tampons and sanitary pads] too, so I learned through my mother and my friends”, with the premenarcheal timing of this education leading to increased confidence.

Many young people did not have any knowledge about menarche before it occurred [24,26–28,30], and carers expressed surprise when their children experienced menarche [24,29], often due to preconceptions around the delayed development of young people with disability. This preconception was passed on to the young people themselves [24,29], and resulted in shock and fear at menarche [23,24,26–28], compounding existing health fears around their other impairments or disorders: “I remember I was in fifth class—in pain—went to the toilet and find a lot of blood. But I never told my family, I was afraid. So I didn’t know what that mean for a long time…” [27]. “I was crying and my heart was beating very fast because I was scared, I had contracted a terrible disease [...]” [24].

Educational environments, useful secondary sources of menarcheal information for children and young people [25–28], also often presented information only following the onset of menarche [27]. Four studies explicitly mentioned that participants or researchers believed that information about menarche provided within an educational environment prior to the occurrence of menarche would be beneficial [23,26–28].

Resonance. For the majority of young people, mothers were a common source of information on menarche. However, the positive impact of timely information and support appeared to be more fully realized when it came from a source who had lived experience of the impairment experienced by the young person [27]. Young people living with impairments who had positive experiences of menarche described premenarcheal support from peers who had similar impairments [23,26,27]. This resonance was also seen when information was delivered using methods that maximized the engagement of the target audience, for example, through the use of videos or braille for young people with hearing and sight impairment, respectively [23,28].

The positive impact of ‘resonance’ was tempered by the potential of propagation for misinformation or negative information if those older relatives or peers with lived experience of disability had incomplete awareness of the principles of good menarcheal support due to shortcomings in their own menarcheal support. For example, in the case of a parent also having a hearing impairment, one participant noted that hearing impairments often lead to difficulties in accessing information independently since information is not available in accessible formats. This would lead to mothers not having adequate knowledge about menarche themselves to pass on to their children. In the words of one participant, “I don’t think she understands how it works like the whole, how the whole female system works… she couldn’t explain it to me, do you know what I mean?” [27].

Frame. There is scope for menarche to be a truly positive experience for menstruators, but this is often dependent on the framing of the menarcheal narratives prevalent within the environment of the young person. One participant, whose experience was recorded by Prior et al., described menarche as a distinctly exciting experience for her and her family: “I went down, and stood straight up, and went into the toilet. Like, I knew what to do. I changed my pants and wore black after that and said, “Mum, I’m bleeding,” Mum’s like, “What do you mean you’re bleeding?” And I said, “Ummm… “. “Oh, you’ve got your period. Yay!” We both jumped up and down.” [28] This singular experience does not have a direct parallel in any of the other studies but clearly illustrates how menarche, for a young person prepared for the event, has the capacity to have a positive impact. Cultural barriers (in settings where menstruation is viewed as a negative or even stigmatising process) may be cited as a reason for the lack of adequate communication around menarche, with a resultant lack of support both socially and medically around the time of menarche [24,29]. This issue is not restricted to low- and middle-income countries [28], and barriers to discussing information around sexuality may also negatively impact the willingness to prepare young people for menarche [28].

The findings of our thematic analysis were used to develop recommendations, each qualified by the degree of confidence in the underpinning evidence base (Table 2).

Discussion

From this systematic review of qualitative research findings, we report that timely and resonant education is important for a positive experience of menarche for young people with visual impairment, hearing impairment, and mobility impairment. Young people mainly receive education about menarche from their mothers or older female family members, as well as from friends, teachers, and health-care professionals. Older female relatives and peers with lived experience of the impairment are particularly impactful sources of menstrual health educational information. Findings from this review have been used to generate recommendations (Table 2) that should support positive experiences of menarche for young people with sensory impairments. Timely education about what to expect at menarche will support positive experiences of menarche (timeliness and frame). Education and information that is relevant to experiencing menarche with a sensory impairment are needed to support young people (resonance). Carers of those with mobility impairments should receive the education necessary to empower the young person for whom they care (resonance).

Our review is limited by the relative paucity of literature on the menarcheal experiences of this vulnerable group. Research
surrounding menstruation has typically been focused on the biological process, rather than on the lived experience of young people [31]. Menstruation has since been recognized as a social and emotional phenomenon as much as a biological one [32], with menstrual health defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle” [7], bringing increasing understanding of the importance of recognizing facilitators of a positive experience [1]. Our findings are consistent with those from research in young people without impairments, with education prior to menarche leading to a positive experience [17], and lack of knowledge leading to a negative experience [1,32]. Our findings add the dimensions of ‘resonance’, and ‘timeliness’. The latter is particularly important in children and young people with visual impairments, with postulated earlier age at menarche in children living with blindness compared to sighted peers [26,33,34]. Additionally, there is evidence to suggest that girls from families of lower socioeconomic status experience earlier menarche [35], and families living in socioeconomic deprivation are over-represented among those affected by childhood visual impairment and blindness [36,37]. The negative impact of the absence of menarcheal knowledge prior to menarche may compound the existing associations of elevated mental health risk into adulthood and early maturation in girls [38].

Another limitation is that of the total of 493 participants in the included studies, at least 228 were over 30 years old at the time of data collection, bringing the risk of recall bias. However, menarche is a unique time in an individual’s life course, and the later age of recollection of events may allow for a clearer subsequent trajectory of positive or negative menstrual health.

Our systematic review is also limited by the absence of detailed ethnographic data on the participants, with ethnicity and religion often unrecorded. However, our review is strengthened by the inclusion of studies representing populations across high and lower and middle-income countries, allowing for the identification of themes applicable across those settings. Primary qualitative research was chosen as a source, as qualitative methods are an appropriate approach for understanding people’s beliefs, experiences, and attitudes. The use of grey literature sources also strengthened this work, as these sources have been recognized as particularly valuable for under-researched areas [39,40] and for public health issues [18].

Only 1 research study screened the results of the grey literature, which may have resulted in the omission of eligible studies able to inform on the study; however, our findings suggest that all those who have meaningful contact with young people prior to menarche should understand that they can have a valuable impact on their education and experience of menarche. Health care professionals and educators should not assume that young people are receiving information about menarche from home and should also be aware that the often-cited discomfort that some professionals have when addressing these topics may provide a negative overlay on their discussion of menarche [41–43]. As the most common source of information, mothers or older female family members, who do not necessarily have any training on the matter, should be supported in providing information, and where older relatives do not have direct lived experience of the relevant impairment, support must be given to allow these relatives to adapt their approach for the young person where necessary. This support could, for example take the form of identifying appropriate older peers with similar impairments willing to discuss experiences of menarche. Additionally, young, people who do not have an older female figure at home should be flagged by health-care professionals and teachers as being less likely to have someone to turn to as their main source of information and support.

The relative paucity of eligible studies indicates the need for additional research in this area, although there are positive signs of a growing evidence base, with all the eligible studies having been undertaken during the past decade. Ideally, future research will collect experiences from participants who are young and who have experienced menarche recently and will be aimed toward developing the necessary complex educational and supportive interventions for young people premenarche. It would also be of benefit to undertake similar work for young people with intellectual disabilities, among whom there is a relatively high prevalence of coexistent sensory impairment [15,16,37].
In conclusion, timely and resonant information about menarche facilitates a positive experience of menarche for young people with hearing, visual, or mobility impairments. Communication barriers exist around the topic, either due to the absence of lived experience of the relevant impairment or due to the narratives on menarche within the young person’s wider society.

Evidence-based recommendations include premenarcheal education undertaken by someone with a similar impairment and which includes advice tailored to the functional needs of the young people. Families and those involved in the care of children with visual, hearing, and mobility impairments who will experience menarche should be made aware of the importance of timely and resonant support and guidance and of broadcasting positive surrounding narratives of menarche. This should enable a positive experience of menarche for these vulnerable young people, supporting a good trajectory for later-life menstrual health.

### Funding Sources

AL Solebo is supported by an NIHR Clinician Scientist award (CS-2018-18-ST2-005). This work was undertaken at UCL Institute of Child Health/Great Ormond Street Hospital for children, which received a proportion of funding from the Department of Health’s NIHR Biomedical Research Centers funding scheme. The sponsors and funding organizations had no role in the design or conduct of this research. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, or the Department of Health and Social Care.

### Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jadohealth.2023.08.014.

### References


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### Table 2

**Recommendations for communication of menarche to children and young people with visual, hearing, or mobility impairment**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strength of recommendation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeliness and frame</td>
<td>Strong</td>
<td>Content should be culturally sensitive and should cover “what is a regular cycle, using sanitary products, managing period pain, when to seek medical support” [27,28]</td>
</tr>
<tr>
<td>Timely education about what to expect at menarche to help avoid negative experiences</td>
<td>Strong</td>
<td>Suggested delivery methods are: by specially trained teacher [26–28] by older mentors with a similar impairment [23,28] through peer support groups [23,28] by health-care professionals [23] and by social workers or community workers [27]</td>
</tr>
<tr>
<td>Resonance and frame</td>
<td>Strong</td>
<td>Suggested approaches for young people with visual impairment [23]: - literature on menarche available in braille, large print or online with accessibility for screen reader software - using 3D anatomical models and sanitary items in order to learn how to use sanitary products - Orientation and Mobility specialists educating young people on how to use public bathroom</td>
</tr>
<tr>
<td>Young people with visual, hearing, or mobility impairments should receive education relevant to experiencing menarche with that impairment</td>
<td>Strong</td>
<td>Suggested approaches for young people with hearing impairments [27,28]: - interpreters for classes which included information about menarche - literature available in accessible formats including visual resources/online videos</td>
</tr>
<tr>
<td>Carers of those with mobility impairments should receive the education necessary to ensure that the young person they care for achieves the most independence possible</td>
<td>Weak (likely substantial variation or uncertainty in values and preferences of population)</td>
<td>Carers should be educated on how best to prepare and support those young people so they are aware of what to expect, and carers should be taught how to best manage their new responsibilities when the young person they care for reaches menarche [29]</td>
</tr>
</tbody>
</table>

* Using the GRADE criteria for strength of recommendation.