

Formulation and development of 'The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire'.

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Abstract

Background:

Menstruation is a vital component of a female's overall health, signifying the transition from childhood to adulthood. Many tools have been developed in the past, but they lack comprehensiveness and cultural adaptations. Thus, this study aims to develop a diverse questionnaire with a scope of addressing both pelvic health and menstrual hygiene, which are often interconnected but overlooked in existing tools for adolescents.

Objectives

This study aimed to develop and validate a questionnaire to assess knowledge, attitudes, and practices pertaining to pelvic health and menstrual hygiene among adolescents.

Materials and methods

The questionnaire was developed drawing references from the previous literature, validated by an expert panel of eight members, and then a pilot study was conducted among 20 adolescent students to check the reliability.

Results

The Content validity ratio was 0.91, with good internal consistency. The test-retest reliability of the questionnaire was also high.

Conclusion

The 'The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene questionnaire' integrates pelvic health and menstrual hygiene components, making it a comprehensive resource. With higher content validity and robust reliability metrics, it ensures precise measurement of knowledge, attitudes, and practices.

Introduction

Menstruation is defined as the "natural physical process of releasing blood and related matter from the uterus through the vagina as part of the menstrual cycle, which is unique to females. It occurs once a month and lasts one to seven days." ^[1] It denotes a transition from childhood to adulthood, marked by menarche, the first menstrual period. The age range of menarche in India ranges from 11–15 years, with

an average age of 13 years, which falls in the adolescent phase of a vulnerable age group. The opinions that are developed throughout these formative adolescent years have a lasting effect on one's life.^[2]

The Global Menstrual Collective Terminology Action Group has defined menstrual health as a “state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity about the menstrual cycle”, which aligns with the WHO’s definition of health.^[3] An Indian meta-analysis revealed three vital pillars of good menstrual hygiene: individual knowledge, social environment, and material environment. An imbalance between these components can lead to poor menstrual hygiene and detrimental effects, such as urinary tract infections, dysmenorrhoea, polycystic ovarian syndrome, cervical cancer, and infertility, affecting females in later stages of life.^[4]

Another meta-analysis stated that more than 50% of girls follow unsatisfactory menstrual health and hygiene, with rural areas having a higher percentage than urban areas. Poor menstrual health and hygiene practices have a detrimental effect on all domains of health—physical, mental, social, psychological, and daily lives—and not only on the girls but also on their families and society.^[5] Cultural taboos and societal norms persist globally, negatively affecting menstrual health.^[6] The WHO has recommended including parents, teachers, healthcare professionals, and boys, along with girls, as the primary stakeholders in awareness and education programs, since all of them play a critical role in menstrual health and hygiene.^[7,8]

The Government of India has made menstrual health and hygiene education mandatory in schools since 2017. It has also launched *the Rashtriya Kishor Swasthya Karyakram* (National Youth Health Program), SAATHIYA resource kits, flipbooks, and the Menstrual Hygiene Scheme to increase awareness, promote hygiene practices, and supply affordable sanitary pads.^[6,9–12] Despite the efforts taken by the Government, 86.15% of participants lacked knowledge about menstruation, 71% believed in menstrual myths, and 63.85% used cloth. The study concluded that group discussions, media campaigns, and health education programs in schools are required to address these difficulties.^[13]

Along with inadequate knowledge about menstruation, a lack of knowledge about basic pelvic floor structure, muscles, and pelvic organ functions has led to a lack of understanding and may leave women unprepared for common life events involving the pelvic area, such as menstruation, menstrual health and hygiene, infections of the reproductive tract, pregnancy, and labour, which can lead to pelvic floor dysfunction and pain. The WHO recommends the inclusion of male students in educational programs to enhance gender equality, build confidence, create a safe and supportive environment, and remove stigma to promote dignified menstruation for girls^[14–15]

India is home to 253 million adolescents, which is almost a quarter of the country’s population and constitutes a vital part of the nation’s public health and development.^[16] Menarche, which falls under the adolescent age range, is the first time an adolescent is exposed to pelvic area and menstrual health and hygiene. Thus, it is crucial to educate and make adolescent girls aware of the pelvic floor, menstrual health, and hygiene to promote overall health and healthy practices.

All health domains are greatly affected by unmet menstrual needs and demands which characterise and provide a quantitative measure of these varied menstrual experiences. However, there is still a significant lack of reliable instruments to quantify the impact of interventions and to characterise experiences. In addition to impeding evidence-based policy development, the lack of standardised and validated tools limits our ability to comprehend the complex nature of women's menstrual experiences and health. According to previous literature, many questionnaires assess practices followed during menstruation but fail to assess knowledge and attitude about pelvic health and menstrual hygiene, while some questionnaires cannot be administered in a country like India, where menstrual health is still shrouded by myths and cultural taboos and do not provide location-specific data.^[2]

Hence, the objective of this study was to develop a comprehensive questionnaire for assessing knowledge, attitudes, and practices of pelvic health and menstrual hygiene among Indian adolescent girls and knowledge and attitudes of pelvic health and menstrual hygiene in adolescent boys.

Materials and method

Ethical approval:

The study commenced after receiving ethical clearance from the ethics committee and review board of Sancheti Institute for Orthopaedics and Rehabilitation, Pune, India with ethical approval number IEC-SIOR/Agenda 069 dated 23rd August 2023. Data collection was done as per the declaration of Helsinki for protection of rights of the subjects.

The development of the 'Adolescent Pelvic and Menstrual Health, Menstrual Hygiene' questionnaire was divided into three major phases: (a) development phase, (b) validation phase, and (c) reproducibility phase

Development Phase:

This phase consisted of three subphases: a) identification of items regarding menstrual health and hygiene, b) categorisation of selected items into knowledge, attitude, and practices, and c) assessment of scores to calculate frequencies.^[17,18]

'The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene' questionnaire was developed following detailed research by extracting references from WHO and UNICEF portals which mainly contained topics related to adolescent health, awareness of menstrual health and hygiene in girls from low-middle-income countries (LMICs), menstrual practices and sanitation, perception and attitude towards menses, as well as sociodemographic factors like mother's age. Occupation and education, father's age, occupation and education, type of family, and number of siblings were included.^[19-21] Following this, a search was conducted using electronic databases such as Google Scholar, PubMed, and Semantic Scholar using keywords such as "Menstrual health, menstrual hygiene, adolescent health" AND, OR Boolean search

with the implication of AND, OR was utilised for the systematic search of articles. The search was performed with the “all article” (refer to Table.1)

The selection criteria for the articles were as follows:

- (i) Articles analysing the knowledge, attitudes, and practices of adolescents aged 10–19 years.
- (ii) Articles emphasising quantitative data on the knowledge, attitude, and practices (KAP) of menstrual health and hygiene.
- iii) Articles published in English within the last 5 years’ period (2020-2025)

Figure 1: Inclusion of articles in the study.

In accordance with the selection criteria, 12 publications were found to be highly relevant to menstrual health and hygiene (refer to Figure 1 and Table 2).^[24-35] Following this, the aim and design of the study, data collection instrument, intended audience, and techniques used to assess the variables of these selected papers were studied in depth. Themes were decided by drawing references from the selected studies, and with further refinement, changes, and elimination items (questions) were formed (refer to Table 3). These items were further categorised into three main domains: knowledge, attitude, and practices, according to the following operational definitions:

1. Knowledge is the capacity to acquire, retain, and use information; it is a mixture of comprehension, experience, discernment, and skill, and awareness of the condition.^[36]
2. Attitude refers to the inclination to react in a certain way to certain situations, to see and interpret events according to certain predispositions, or to organise opinions into coherent and interrelated structures. Thinking and behaviour towards conditions.^[36]
3. Practice is defined as habitual community involvement to prevent the condition.^[36]

After a thorough article analysis, a questionnaire was developed. It contained two sections on demographic information and menstrual history, followed by 42 questions to assess knowledge, attitude, and practices of menstrual health and hygiene in adolescent girls, and 23 questions to assess knowledge and attitude of menstrual health and hygiene in adolescent boys.

Demographics and menstrual history

The sociodemographic factors included the school’s name, standard studying in, age, gender, with whom the child currently stays, religion, education qualification, occupation of the father and mother, family type, monthly income, TV at home, pocket money, and siblings. The menstrual history included age at menarche, symptoms experienced during menses, gap between two consecutive menses, duration and amount of blood flow, family’s reaction to menstruation, and whether any sessions regarding menstruation were conducted in school.

Knowledge, attitude, and practice (KAP) questions for girls

The questionnaire included 42 items for girls in multiple-choice format and was categorised into three domains: knowledge (15 items), attitude (8 items), and practices (19 items).^[36] The total score was calculated by adding the individual scores for each KAP domain. The total score was calculated by adding the scores of the individual domains (knowledge, attitude, and practice) and was scored out of 50. Later, to set the cut-off, the combined scores for the knowledge and practice domains were summed up and classified into two categories: good (> 50 percent) and poor (less than 50 percent). The scores for the attitude domain were summed and classified into two categories: positive attitude (more than 80% score) and needs improvement (below 80% score).

Knowledge and attitude (KA) questions for boys

The questionnaire included 23 items in multiple-choice format and was categorised into two domains: knowledge (15 items) and attitude (eight items). The total score for the attitude domain was 16 points. The total score for the knowledge domain was classified into two categories: good (> 50 percent) and poor (less than 50 percent). Later, all total scores for the attitude domain were classified into two categories: positive attitude (more than 80% score) and need improvement (below 80% score). (refer to Table 4)

Validation phase:

Face validity: ^[37-39]

Face validity was examined using quantitative and qualitative methods. An expert panel scrutinised the questions. The expert panel included eight members: two board-recognised gynaecologists with 24 years of working experience and 22 years of clinical practice; two board-recognised women's health physiotherapists working in the field of adolescent health for 12 years with 15 years of expertise in the field; two school biology teachers working in board-recognised schools for 20 years with 26 years of teaching experience; and two statisticians with 17 years of research experience and 25 years of research experience. The panel reviewed the items to ascertain whether they could appropriately assess what they intended to access. In addition, 10 female and 10 male adolescent children were recruited using convenience sampling to assess whether the items were relevant, understandable, and clear. Prior to recruitment, an assent was obtained from the participants and an informed consent was obtained from their parents. Subsequently, the impact score was determined and used, the recruited 20 adolescent children assessed the importance of each item using a five-point Likert scale (very important=score 5, important=score 4, moderately important=score 3, slightly important=score 2, and not at all important=score 1). Items with mean scores lower than 3 were eliminated.

Content validity: ^[37-39]

The content validity of the questionnaire was established using a comprehensive, multistage process. Initially, a thorough literature analysis was conducted to identify essential domains and items related to menstrual health and hygiene. This review included peer-reviewed literature, previously validated instruments, and current guidelines. The expert panel examined the preliminary item pool. Experts used a modified Delphi technique to score each item's relevance, clarity, and importance on a five-point Likert scale. The content validity index (CVI) was determined for each item (I-CVI). According to the Waltz and Bausell index, items with an I-CVI < 0.75 were removed.

$$\text{I-CVI} = \text{Number of experts rating an item as 4 or 5} / \text{Total number of experts}.$$

The content validity ratio (CVR) was calculated for each item using Lawshe's formula:

$$\text{CVR} = (\text{ne} - N/2) / (N/2).$$

ne = essential

N = Total number of participants

With eight experts, the critical set CVR value was 0.75 at $\alpha = 0.05$. Items with CVR < 0.75 were excluded. The mean CVR of the retained items for the knowledge, attitude, and practice domains were 0.90, 0.91, and 0.92, respectively, with a mean CVR of 0.91, indicating strong content validity. (see Tables 5, 6, and 7). Finally, a pilot study with 20 participants was conducted to evaluate the feasibility and item interpretation of the questionnaire on the same cohort used in the validity. The high completion rate (98%) and positive participant feedback further supported the content validity of the questionnaire, ensuring comprehensive coverage of the menstrual health and hygiene construct.

Construct validity: [37-39]

The construct validity of the questionnaire was assessed by correlating the scores with those of an established menstrual practices questionnaire. A substantial positive correlation ($r = 0.72$, $p < 0.001$) supported the convergent validity of the Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire.

Reliability phase:

Internal consistency: [18,40,41]

Cronbach's alpha (α) was used to determine the internal consistency of the knowledge, attitude, and practice domains which were 0.85, 0.92, and 0.82, respectively, indicating good, excellent, and good internal consistency, respectively. These results indicate that the items in each domain accurately assessed their respective components. The total variance of the sum of all items was calculated using SPSS version 29.

Test-retest reliability: [18,41]

It was evaluated to determine the long-term stability of the questionnaire. The questionnaire was administered to the same group of participants (n=20), with a 6 weeks gap between administrations. The Pearson correlation coefficient (r) was used to determine the consistency of the replies between the two time points. The correlation coefficients for the knowledge, attitude, and practice areas were 0.82, 0.89, and 0.76, respectively. These numbers indicate high test-retest reliability, implying that the questionnaire produces consistent findings over time.

Discussion

‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’, designed and validated in this study, has excellent psychometric features, including content validity, construct validity, and reliability. Although they offer different contributions in terms of scope, these results are in line with prior research that centred on developing equivalent tools for adolescent health and hygiene.

Similarly, in another study, the goal of the tool used, the Menstrual Needs Practice Questionnaire -36(MNPS- 36), was to evaluate menstrual health and hygiene.^[26] The MNPS-36 has a greater expert consensus on the target audience, as supported by its low CVR of 0.90, compared to the questionnaire developed in this study. Due to low-reliability evidence, the MNPS-36 might not be as adaptable to diverse cultures. Despite lacking a categorical domain-wise distribution, it has a higher internal consistency Cronbach’s alpha score of 0.87, which is greater than that of ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire.’

In contrast to the menstrual practice questionnaire (CVI= 0.85), the domain-wise CVI of ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’ has a higher CVI of 0.91 and a more thorough breakdown of reliability across knowledge, attitude, and practice domains (Cronbach’s alpha 0.85, 0.92, and 0.82, respectively).^[23] The Menstrual practice questionnaire is simple and only focuses on the practice domain, and may be more useful in situations where time is a constraint. The questionnaire developed in this study has a comprehensive scope, focusing on both pelvic health and menstrual hygiene. It covers not only practices but also knowledge and attitudes related to menstrual hygiene. Depending on the application circumstances, both questionnaires exhibited high psychometric properties.

In another survey, the Menstrual Attitude Questionnaire was administered, similar to ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’, which evaluates menstrual health by measuring attitudes towards menstruation.^[34] However, both questionnaires have different psychometric properties; the mean CVR of ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’ is 0.91, while that of the Menstrual Attitude Questionnaire is 0.85, which is lower. ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’ addresses health-related issues to a greater extent than the Menstrual Attitude Questionnaire, making it a more robust tool for assessment.

Although the socio demographic factors were considered in the present study, the authors have not assessed its influence on the knowledge, attitude and practices of the menstrual health and hygiene which needs to be evaluated in the further processes. [24,42,43]

Conclusion

The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire has a comprehensive scope, addressing both pelvic health and menstrual hygiene, which are often interconnected but overlooked in existing tools. With higher content validity and robust reliability metrics, it ensures precise measurement of knowledge, attitudes, and practices. Additionally, its detailed structure allows targeted interventions in adolescent health education. By integrating multiple health aspects, this questionnaire stands out as a superior instrument for accurately assessing and improving adolescent health outcomes in diverse cultural contexts in the future.

Declarations

Acknowledgement: The authors express their heartfelt gratitude to all the institutional heads, parents, and participants for their contribution to the study.

Copyright number: L-161044/2025 (Copyright Office, Government of India)

Competing interest: None

Ethics Approval and Consent to Participate: The study was approved by the ethics committee of Sancheti Institute for Orthopaedics and Rehabilitation, Pune, India with approval number IEC-SIOR/Agenda 069 dated 23rd August 2023. All the participants provided assent and parents provided written consent. The study process was carried as per the declaration of Helsinki guidelines. All participants were informed about the purpose of the study, assured of confidentiality, and provided written consent prior to participation. Participation was voluntary, and respondents could withdraw at any time without consequence.

Consent for Publication: Not applicable

Availability of data and materials: Available as supplementary data

Competing interests: None

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Authors contribution: SM, AA and SP conceptualized the study. SM, AA, AS and SP designed, supervised, analysed and were involved in literature review. SM and SP performed data collection and manuscript writing. AA and AS reviewed the manuscript.

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Tables

Table 1: Overview of research activity contributing to development of ‘The Adolescent Pelvic and Menstrual Health, Menstrual Hygiene Questionnaire’

Research activity and citation	Summary of participants and method	Number of studies found
Systematic reviews and quantitative qualitative data about knowledge, attitude and practices of menstrual health hygiene [22]	Systematic searching identified qualitative studies on women's and girls' menstrual experiences in low- and middle-income countries. This review recorded the findings across this body of evidence. In addition to the main synthesis, we noted the menstrual knowledge, attitudes, and practices reported in the included studies.	76 papers
Systematic review of measures used in the studies of menstrual health [23]	This search recorded the tools used for i: <div> 1. Trials of menstrual health interventions and studies in LMICs 2. tool development studies which tested the reliability or validity of the tool. </div>	54 papers: 23 trials 22 development studies 9 tested studies

Table 2: Articles included to form themes and items in the development of “The Adolescent Pelvic health and Menstrual health, menstrual hygiene” questionnaire.

Theme/Domain	Authors	Sample size	Tool used	Items	CVR	Reliability (Cronbach's alpha)
Knowledge, attitude and practices of menstrual health hygiene	M Yogesh, Trivedi NS, et al [24]	361	Self-made questionnaire	40	-	0.783
Knowledge, attitude and practices of menstrual health hygiene	VG J, Rupashree R, Somasundaram T (2021) [25]	187	Self-made questionnaire	17	-	0.881
Practice of menstrual hygiene	Hennegan J, et al (2020) [26]	-	Menstrual practice needs scale-36	36	0.90	0.87
Knowledge and practice of menstrual hygiene	Belayneh Z, et al (2019) [27]	791	Structured self-made questionnaire	30	-	0.87
Knowledge, attitude and practices of menstrual health hygiene, sexual behaviours	Alimoradi Z, et al (2019) [28]	560	Female adolescents' sexual reproductive self-care scale	82	0.91	0.89
Knowledge, attitude and practices of menstrual health hygiene	Altangarvdi B, et al (2019) [29]	19 schools	Questionnaire	31	-	0.95-0.97
Knowledge, attitude and practices of menstrual health hygiene	Ramaiya A, et al (2019) [30]	240 villages	menstrual hygiene management scale	-	-	0.90
Attitude and practices of menstrual health hygiene	Darabi F, et al (2018) [31]	578	The menstrual health-seeking behaviors questionnaire (MHS BQ-42)	51	0.79	0.92
Knowledge, attitude and practices of menstrual health hygiene	Hyunjeong Shin, Young-Joo Park & Inhae Cho (2018) [32]	230	Menstrual Health Instrument (MHI)	44	0.71-0.90	0.62 to 0.94

Attitude towards menstrual health and hygiene	Roos K, et al (2018) ^[33]	163 males	Menstrual attitude questionnaire	33	NA	0.68-0.71
Attitude towards menstrual health and hygiene	Brooks Gunn, et al (1980) ^[34]	-	Self-made questionnaire	33	0.85	0.87
Attitude towards menstrual health and hygiene	Roberts,2004 ^[35]	200	The Menstrual Self-Evaluation Scale	27	0.85-0.90	0.87

Table 3: Themes used to formulate items and domain-wise classification.

Sr.no	Theme word	Item	Domain
1.	Understanding	According to you, menstruation(periods) is: Are you aware of the hygiene practices followed during periods?	Knowledge
2.	Beliefs	Do you think menstrual blood is impure/unhygienic? Do you associate your period with foul smell? Does menstruation continue throughout a female's life?	Knowledge
3.	Pelvic anatomy and structures	Which organ is the source of blood during menses? How many organs are supported by the pelvic floor? Through which opening do the stools, urine, and menstrual blood pass?	Knowledge
4.	Cycle	At what age did you have your first period? What is the usual gap between your two consecutive periods? What is the average blood flow during menses?	Knowledge
5.	Source of information	From whom did you first hear about menses? Did you know about menstruation before experiencing it?	Knowledge
6.	Frequency	According to you, what is the usual gap between the two menses?	Knowledge
7.	Duration	What is the duration of normal menstruation?	Knowledge
6.	Perception	It is embarrassing for me to buy sanitary pads. I hide my menstruation from the male members of my family.	Attitude
7.	Social Influence	Experience of parents using social media devices.	Attitude
8.	Privacy	Hiding menses from males in the family.	Attitude
9.	Acceptance	Use of new devices available in the market	Attitude
10.	Confidence	Self-esteem increases after menarche	Attitude

11.	School performance	Leaves during menses Exam performances during menses	Attitude, practice
12.	Overall health	Is menstruation good for health	Attitude, practice
13.	Products	Which menstrual product do you use? How many times do you change your pad in a day?	Practice
14.	Drying	If you are using a cloth, how do you dry it?	Practice
15.	Hygiene	Washing hands after changing the pads. Motion in which genitals are cleaned. Material used for cleaning genitals	Practice
16.	Diet	Following dietary restrictions during menses.	Practice
17.	Social interaction	Avoidance of social gatherings during menses	Practice
18.	Activities	Exercise during the periods. Household chores during the periods.	Practice
19.	Medicine	Tablet consumption during menses. Doctor consultation for menstrual problems.	Practice

Table 4: Scoring of the questionnaire.

Sr.no	Gender	Domain	Scoring	Maximum scores
1.	Female, male	Knowledge	Right answer- 1 point Wrong answer- 0 point	15
2.	Female, male	Attitude	3-point Likert: don't know—0, disagree—1 point agree—2 points.	16
3.	Female	Practice	Right answer- 1 point Wrong answer- 0 point	19
Total score for females	Knowledge domain score+ Attitude domain score+ Practice domain score			50
Total scores for males	Knowledge domain score+ Attitude domain score			31

Table 5: Knowledge domain item wise CVR[#] and Cronbach Alpha coefficient with mean values.

Domain	Sr.no	Items	CVR	Interpretation	Alpha Cronbach	Interpretation
Knowledge	1.	According to you, menstruation (periods) is?	1	Retained	0.84	Good
	2.	According to you, do you think that the menstrual blood is impure or unhygienic?	1	Retained	0.87	Good
	3.	Do you associate monthly periods with foul smell?	0.98	Retained	0.85	Good
	4.	Which of the following organs is the source of blood during menses?	1	Retained	0.86	Good
	5.	At what age do you think most girls usually get their first periods?	1	Retained	0.83	Good
	6.	According to you, what is the duration of normal menstruation?	0.75	Retained	0.85	Good
	7.	According to you, what is the usual gap between two menses?	1	Retained	0.84	Good
	8.	Hygiene refers to keeping yourself and your surroundings clean in order to prevent any disease; do you know about hygiene followed during periods?	1	Retained	0.86	Good
	9.	How many organs are supported by the pelvic floor muscles/muscles at the base of the pelvic area?	0.98	Retained	0.85	Good
	10.	Which of the following organs constitute the pelvic floor?	1	Retained	0.87	Good
	11.	According to you, from which opening	1	Retained	0.84	Good

	of the pelvic floor does urine pass?					
12.	According to you, from which opening of the pelvic floor does the menstrual blood flow?	1	Retained	0.85	Good	
13.	According to you, from which opening of the pelvic floor do we pass the stools?	1	Retained	0.86	Good	
14.	Did you know anything about menses before attaining it?	0.92	Retained	0.84	Good	
15.	If yes to Question 14, from where have you heard about menses? (multiple answers are allowed)	0.70	Eliminated	0.65	Poor	
16.	According to you,does menstruation continue throughout the life of a female?	1	Retained	0.84	Good	
Mean		0.90		0.85		

#CVR= Content validity ratio

Table 6: Attitude domain item wise CVR[#] and Cronbach Alpha coefficient with mean values.

Domain	Sr.no	Items	CVR	Interpretation	Alpha Cronbach	Interpretation
Attitude	1.	It is embarrassing for me to buy a sanitary pad.	1	Retained	0.91	Excellent
	2.	I hide that I am menstruating from the male members in my family.	0.90	Retained	0.93	Excellent
	3.	I believe in the experience of my parents and family over social media in the selection of menstrual products available in the market.	0.98	Retained	0.92	Excellent
	4.	I Believe in using new device it es (menstrual cups, tampons, menstrual discs) available in the market for menstrual hygiene	0.90	Retained	0.94	Excellent
	5.	I think that self-esteem and confidence increase after attaining menarche.	1	Retained	0.91	Excellent
	6.	I think that self-esteem and confidence increase after attaining menarche.	0.75	Retained	0.92	Excellent
	7.	I think that menstruation is good for health	1	Retained	0.91	Excellent
	8.	I think that menses interfere with school and exam performance.	0.75	Retained	0.93	Excellent
Mean			0.91		0.91	

#CVR= Content validity ratio

Table 7: Practice domain item wise CVR[#] and Cronbach Alpha coefficient with mean values.

Domain	Sr.no	Items	CVR	Interpretation	Alpha Cronbach	Interpretation
Practice	1.	Which menstrual product do you use during your periods?	1	Retained	0.81	Good
	2.	If you use a cloth during your menses, how do you clean it?	0.90	Retained	0.82	Good
	3.	If you are using a cloth during your menses, how do you dry the cloth?	0.90	Retained	0.83	Good
	4.	How many times do you change the pad in a day?	1	Retained	0.80	Good
	5.	Where do you throw your used pads?	1	Retained	0.83	Good
	6.	After Changing the pad do you wash your hands with soap?	0.92	Retained	0.81	Good
	7.	With what material do you wrap the used pad before throwing it?	1	Retained	0.84	Good
	8.	Do you regularly clean your genitals (private parts) during menstruation?	1	Retained	0.82	Good
	9.	With what material do you use to clean your genitals?	1	Retained	0.82	Good
	10.	Do you clean your genitals in front back motion?	1	Retained	0.83	Good
	11.	Do you feel comfortable to come to school during menstruation, if not then what is the reason for not attending the school during periods?	1	Retained	0.81	Good
	12.	How often do you take leave from school during your menses?	1	Retained	0.83	Good
	13.	Do you follow any dietary restrictions	0.92	Retained	0.80	Good

	during your periods?				
14.	Do you avoid social outings during menses?	0.98	Retained	0.84	Good
15.	Do you do household chores during menses?	1	Retained	0.81	Good
16.	Do you play sports or exercise during your menses?	1	Retained	0.82	Good
17.	Are you made to get isolated in a different room from your family or sleep separately during your menses?	1	Retained	0.80	Good
18.	Do you use any medications(tablets) for menstrual problems?	0.90	Retained	0.82	Good
19.	Do you feel comfortable to consult a doctor if you are facing any menstrual problems?	1	Retained	0.82	Good
20.	Do you avoid going to temples/ holy places during periods?	0.70	Eliminated	0.56	Poor
21.	Do you read holy books during periods?	0.70	Eliminated	0.62	Poor
Mean		0.92		0.82	

#CVR= Content validity ratio

Figures

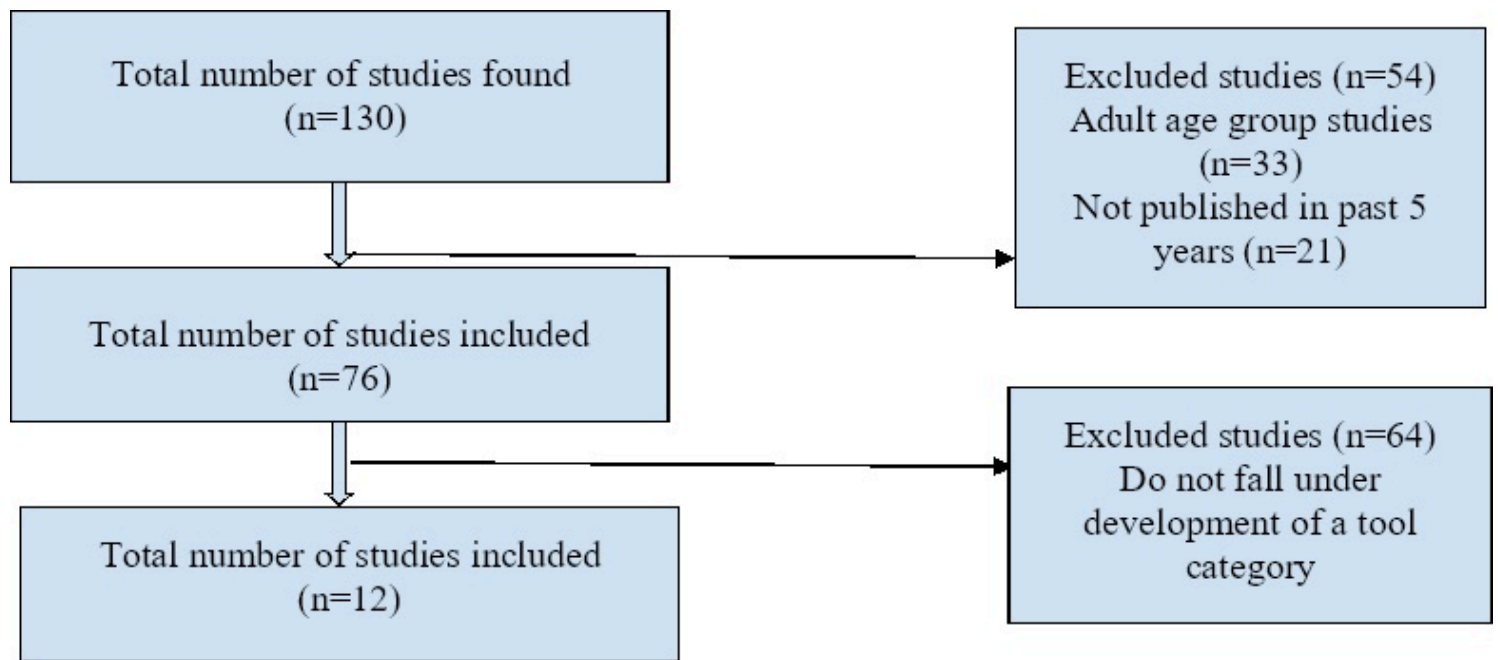


Figure 1

Inclusion of articles in the study.