ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 07 | July - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MENSTRUAL HYGIENE AWARENESS AND PERCEPTION AMONG ADOLESCENT GIRLS

Healthcare

Tushti Bhardwaj* Professor, Department of Social Work, Dr. Bhim Rao Ambedkar College, University of Delhi, Yamuna Vihar, Main Wazirabad Road, Delhi- 110094 *Corresponding Author

Sneha Mishra BSW student, Department of Social Work, Dr. Bhim Rao Ambedkar College, University of Delhi

Sarla Bhardwaj Professor, Department of Mathematics, Dr. Bhim Rao Ambedkar College, University of Delhi

ABSTRACT

Introduction: Menstruation in large parts of India involves several myths and restrictions to the young girls. The open and healthy discussions around menstrual hygiene is yet not widely practiced. In such circumstances, the young girls may develop unhealthy perception and lack information about maintaining hygienic care posing long term health risks to themselves. **Objectives:** The major aims were: 1) to study the awareness about safe and hygienic practices related to menstruation and (2) to understand the belief, perception, and sources of information about menstruation among adolescent girls. **Methods:** A descriptive study conducted in NCT of Delhi with 99 girls between 13-21 years of age. The sample was drawn using snowball sampling techniques and data collected through telephonic interviews with the help of a digital interview schedule. **Results:** 99% of the sample reported physical and emotional problems during menstruation which included- pain, aggression, mood irritability, sadness, hopeless, itching in intimate parts, nausea, digestive issues which forced them to miss school/work. Unhealthy perception like menstruating woman should not enter place of worship, wash hair, exercise, swim, dance, sports and avoid eating curd, pickles and tamarind were reported. Safe disposal practice of sanitary napkins was missing in almost 1/4th of the sample. **Conclusion:** Physical and emotional issues related with menstruation are important to be addressed to help young girls adjust with changes in their body and remain active. The large-scale awareness programs through schools and local level organizations on regular basis are required to help instill healthy perception among the young mind and safe disposal practice.

KEYWORDS

Adolescents, Menstrual hygiene, Menstruation, perception, awareness

INTRODUCTION

Adolescence is a time period aged between 10 to 19 years of age(1, 2). It is a transitional phase starting from childhood to adulthood. Adolescents contribute to 20% of the world's population out of whom 85% are in developing countries(3). In India, adolescents constitute 21.4% of the total population which means one-fifth of the total population is adolescence(4). Since adolescents are a young group so they are considered to be relatively healthy and less prone to diseases. But reproductive health concerns and menstrual hygiene among adolescents is one of the most common concerns requiring special consideration world over(3, 5). Adolescence among girls is a dynamic period, which includes stressful events like menarche, a landmark of female puberty. It is a normal physiological, natural process among adolescent females who experience shedding of blood for approximately one week every month from the age of maturity until menopause(6). The first menstruation (menarche) occurs between 11 to 15 years with a mean of 13 years(7-9). Menstruation in large parts of India is considered to be taboo, a topic not to be discussed, and has several myths associated with it. In India, there are many restrictions laid on young girls from participating in household and other religious activities during menstruation. Studies have reported certain restrictions in day-to-day activities such as taking bath, changing clothes, combing hair, and entering holy places(10). Other than this, there are some diet restrictions which prohibit girls from consuming food items like jaggery, papaya, rice, curd, milk, lassi, potato, onion, sugarcane, etc. during the menstrual period(9).

Research shows that young girls lack awareness about safe and hygienic menstrual practices reflecting their knowledge and information needs(11). Some of the serious consequences and ill health effects of wrong or unhygienic menstrual practices include stillbirth, and reproductive tract infection, etc.(12). Data suggests that only 36% women in India use sanitary pads suggesting that a large proportion of menstruating groups resorts to unhygienic materials(13). In India, the perception about menstruation prevents adolescent girls from discussing it with their parents, teachers, etc. which put them at risk of various gynecological problems. There has been a culture of shame and silence which needs to be changed. Therefore, it becomes important to talk about this issue in order to spread scientific knowledge and awareness in the community. Thus, the proposed study aims to collect information about the knowledge, perception, and awareness about menstrual hygiene among adolescent girls as the base line survey of planning future interventions.

METHODS

The research was conducted with major aims (1) to study the awareness about safe and hygienic practices related to menstruation and (2) to understand the belief, perception, and sources of information about menstruation among adolescent girls. It was a descriptive and study conducted in NCT of Delhi. A total of 100 girls between the age group 13-21 years of age were approached using snowball sampling techniques but only 99 respondents completed the data collection process, one decided to withdraw her participation. Informed consent was obtained from participants verbally and they were ensured about anonymity and confidentiality. Questions and concerns of the participants were addressed before beginning the interview process. The information was collected through the telephonic interview using a structured and pretested digital interview schedule. The schedule consisted of 32 questions for collecting information on demographic profile, menstruation, menarche, duration of bleeding, types of products used for menstruation, source of information, myths and taboos experienced, beliefs, menstrual hygiene-related practices, awareness about biodegradable pads, use of pain killers, problems and challenges faced, etc. The interview schedule was first pretested with 10 participants and necessary adjustments were made based on the responses and feedback from the pre-testing participants. The data from pre-testing was not included in analysis of the results. A complete telephonic interview took about 15 to 20 minutes for a single respondent. The study followed mix-method approach combing qualitative and qualitative techniques of data management and analysis. The data was collected in two months' time period between June-July 2021. Data was managed in MS excel and descriptive analysis was performed as study aimed to synthesize the awareness level and perception of adolescents about menstrual hygiene, thus inferential statistical techniques were out of consideration. The responses of the girls were supported by their verbatim as original.

Ethical Considerations

The data was collected telephonically during covid lockdown period, so receiving written consent was not possible. Thus, verbal consent of participation in this study was obtained from the participants.

RESULTS

A total of 99 girls between the age group of 13-21 participated in this study (table 1). The sample was predominately Hindu with 92% representation of this religious group. Majority of the respondents were 18 to 21 years of age (57%). Most of them (41.41%) were

pursuing their graduation during the study completion phase. Though, we had representation from various zones of Delhi NCR including Ghaziabad (1) and Gurugram (1) but maximum number of participants were from East Delhi (29.29%). Most of the girls (57.57%) were between 12 to 14 years followed by 14-16 years of age (33.34%) at the time of menarche. The monthly cycle duration of a big majority (68.68%) was about 28 to 30 days. For 14.14 % girls cycle length was 31 to 35 days while another 13.13 % had less than 28 days of monthly cycle duration. The menstruation bleeding length for 54.54% respondents were between 3 to 5 days, 27.27% had for 5 to 7 days, and 16.16% experienced bleeding for less than 3 days while only 2.02 had longer length like 7 days.

Table1: Demographic characteristics and menstrual health information

Demographic characteristics	Percentage of respondents
Age	
12 – 15	9.09
15 – 18	23.23
18 – 21	57.57
Above 21	10.10
Education	
Below X	4.04
X – XII	21.21
Pursuing Graduation	41.41
Graduate	6.06
No Response	27.27
Residence	
North Delhi	6.06
East Delhi	29.29
South Delhi	22.22
West Delhi	2.02
Menarche	
10 – 12	5.05
12 – 14	57.57
14 – 16	34.34
Above 16	3.03
Menstrual cycle duration	
Less than 28 Days	13.13
28 – 30 Days	68.68
31 – 35 Days	14.14
More than 35 Days	4.04
Menstruation length	
Less than 3 Days	16.16
3 – 5 Days	54.54
5 – 7 Days	27.27
More than 7 Days	2.02

Table 2 shows attributes regarding menstrual practices among the participants. A big majority of the girls 85.85% generally use sanitary napkins, 9.09% use tampons, 4.04% use clothes and only 1% use menstrual cup. Majority of the respondents (71.71%) had to change clothes or napkins every 3 to 5 hours while 14 % were changing either less than 3 hours or more than 5 hours basis.

The extent of bleeding was moderate for around 70.70% of respondents while it was quite low for 10.10% and heavy for 19.19% of respondents. It is interesting to note that only 1% of respondents did not face any problems during menstruation rest all reported one or another concerns. Around 62.62% of girls experience cramps/pain during menstruation, 59.59% experience anger or mood irritability issues, 35.35% face sadness, hopelessness, 27.27% face itching or rashes in intimate body parts, 16.16% face odor or smell related issues, 37.37% of respondents faced some other issues like nausea, digestive issues, exclusion from family, 17.17% have to miss their schools, colleges or work during menstruation etc. A total of 23% of participants had to take painkillers, out of whom 13 % were required painkiller doses every 3-5 hours, 7% take painkillers after 7 hours and rest 1% only once a day. A big majority 63.63% of the respondents used newspaper for disposal of used menstrual products, 6.06% of the respondents wrap in polyethene, polybags,1.01% wrap in clothes or bin it directly while1.01% wash it and reuse the products while almost ¼ proportion did not respond to this question. Approximately 58.58% of the respondents knew about biodegradable sanitary napkins. A majority among them (19.19%) heard about it from social media, 17.17 % heard it from schools, colleges and hospitals, 6.06% from TV, advertisement or family members while another 5.05% heard about biodegradable sanitary napkins through NGOs.

A very big majority 95% of the respondents took daily bath during their menstrual periods but 4.04% girls did not take daily bath. When asked about the rationale of not taking daily bath, they said, *"Stomach swelling may occur", "Bleeding flow may become low," "it's completely individual's choice".*

In response to a question if they frequently change different types of menstrual products 23.23% replied yes, while 53.53% of the respondents were not sure about it. Few of the reasons attributed to frequent change of sanitary products/brand were- *"Quality matters", "One may decide according to one's pocket expenses", "depends on everyone's choice and needs", "how does it matter all products are same", "no side effects its matter of comfort"* while few of the reasons against frequent change of sanitary products were-*"its uncomfortable", "may create rashes or other harm to intimate parts", "one may develop pain, so must avoid doing so."*

Table 2: Menstrual hygiene Practice and awareness.

Attributes	Percentage of respondents
Menstrual products	
Sanitary Napkins	85.85
Cloths	4.04
Tampons	9.09
Menstrual Cup	1.01
Frequency of changing clothes/napkins	
Less than 3 Hours	14.14
Within 3 – 5 Hours	71.71
More than 5 Hours	14.14
Extent of bleeding	
Quite Low	10.10
Moderate	70.70
Heavy	19.19
Nature of problems during menstruation	
Miss School/College/Work	17.17
Cramps/Pain	62.62
Itching/Rashes in Intimate Area	27.27
Odor/Smell	16.16
Sadness	35.35
Anxiety/Tension	22.22
Anger/Irritability	59.59
Any Other (nausea/digestive issues/hopelessness/exclusion from family)	37.37
Use of Pain killers	
Within 3 – 5 Hours	13.13
More than 5 Hours	7.07
1 Tablet per day	3.03
Not Taken	37.37
No Response	39.39
Dispose of menstrual products	
Wrapped in Newspaper/Paper	63.63
Wrapped in Polythene/Poly Bag/Bag	6.06
Wrapped in Cloth	1.01
Direct throw in the dustbin	1.01
Wash it (clothes/menstrual cup/others)	1.01
No Response	27
Source of information about biodegradable napkins	
NGO	5.05
Social Media	19.19
TV (ads/movies)	6.06
Family Members	6.06
Others (school/college/hospitals etc.)	17.17
Not heard	46.46

A big majority (85.85%) replied that girls need to consume good amount of water/liquids during menstruation, 1.01% said liquid diet not required and 13.13% replied being not sure to this question. Some of the reasons extended by girls for high liquid requirements were, "*Keeping oneself hydrated", feeling fresh", "feeling relaxed", "liquids aids in digestion", "maintain energy level", "helps in blood purification", "control anger and anxiety", "makes blood flow smooth", and "reduces chance of swelling,".*

Need of consuming green leafy vegetables was regarded by 73.73% of respondent while 21.21% were not sure about it. On the question of avoiding carbonated drinks, caffeine and spicy food during menstruation 55.55% respondents replied yes, 22.22% replied no and another 22.22% were not sure about it. Girls extended following reasons for avoiding this food, *"Everything is fine but not caffeine because it will increase the problem", "cold products should be avoided as it increases the pain", "may increase blood flow", "must avoid as it causes gastric troubles"*

Though 89.89% did not consider menstruating women as impure but approximately 5.05% of the respondents considered menstruating women as impure and another 5.05% were not sure about it. Few rationales of considering women as impure were: *"because blood is impure", "one release some sort of negative energy during periods".*

One fifth portion of the sample (21.21%) shared that menstruating woman should not enter place of worship, offer prayers and another 15.15% chose being unsure about it. Few reasons for justifying women as impure by the girls were: *"I personally believe that menstruating woman should not offer prayers and I don't have a reason for the same", "as my mother believe it so do I", "because we are impure during periods", "because our society believe it so we need to follow"* , "*because at that time one is impure and according to Hindu mythology and religious practices one is not allowed to pray during those days", "It's a ritual to be followed in my home, so I have to follow it".*

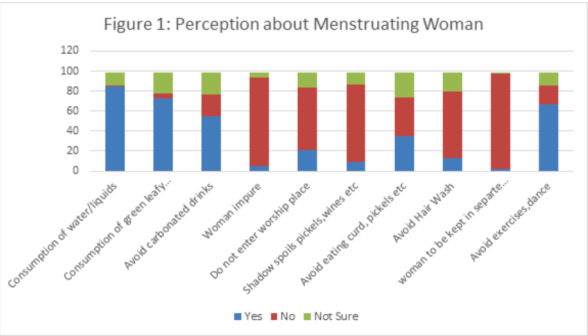
Though a small percentage but 7.07% of the respondents felt that a menstruating woman or girl should not cook food or enter the kitchen. Similarly, 9.09% responded that contact or shadow of menstruating woman or girl may spoil pickles, wines and bread while 12.02% were unsure about it. Few of the rationale extended by girls for the same were: "*Yes, I have noticed it, it happened in my home", "Pickles may get spoiled, but not sure for bread and wine".*

More than one third of the sample (35.35%) believed that a menstruating woman or girl should avoid eating curd, pickles and tamarind, and another 25.25% were not sure about it. The rationale extended by the girls for this included: "*Yes, it may give cramps", "it may result in blood related problems", "blood flow may increase", "induces pain in stomach or aggravates pain", "because it is advisable to avoid these products specially dairy", "because it contains some bacteria that can harm us during those time", "As these items can affect our periods".*

A small percentage13.13% responded that girls should not wash hair during menstruation periods and 19.19% were not sure about it. The girls reasoned that, *"to maintain that PH level in their body one must avoid washing hair", "In my family this is being followed, so I do the same".*

Further 2.02% felt that menstruating woman should be kept in a separate room. A total of 19.19% responded that menstruating woman should not exercise, swim, dance, sports and other 13.13% were not sure about it. Few of the reasons for avoiding exercises were: *"it may increase pain and other problems", "makes one uncomfortable", "it will increase the blood discharge", "No hard-core exercises though yoga may benefit".*

A very big majority (91.91%) said that girls or women may develop skin infections in intimate areas due to unhygienic practice, 62.62% said that women may get reproductive tract infections or even serious diseases like cancer**.** The detailed favorable and unfavorable rationale extended by the girls for various concerns is presented in appendix 1.



DISCUSSION

This paper presents information about awareness, practice and perception of young adolescent girls from Delhi NCR. The issues related with menstruation hygiene are important in order to ensure health and safety of adolescent girls.

The present study shows that majority of the girls (85.85%) use sanitary napkins to manage menstruation period. This is a good number in comparison to a previous study conducted in 2014 which confirmed that 64% of the girls in urban area used sanitary napkins(14) and a study conducted in 2007 Delhi suggested that 74.8% used homemade sanitary pads, while 24% used ready-made sanitary pads(15). Another similar study(16) in 2001 conducted in urban areas of south India confirmed that only 8.3% of the girls have availability of sanitary pads. Financial constraints, poverty and ignorance about hygienic concerns are believed to be the reasons for scarce use of sanitary napkins in the previous decades forcing girls to use unhygienic clothes(17). Our study suggested that almost 69% of the girls dispose off the used sanitary pads either wrapping with newspaper or polythene cover, while in a previous study conducted in 1994, appropriate disposal was only 57.5%. Though these evidence suggest a positive change or environment friendly change in behavior of young girls but for a period of 18 years gap, percentage of change(12 % only) seems to be very small suggesting need of rigorous awareness programme for safe disposal practices among the young girls(11). Our study revealed that 71% of the girls change their sanitary napkins every 3-5 hours but a previous study suggested that 27% percent of girls in urban areas change their pads only once a day and 52% clean their external genitalia only while bathing(14). This is a clear indication about the rise in awareness about the menstrual hygiene. During menstruation, maintaining proper hygiene is extremely important because this affect the health of the menstruating woman by increasing their vulnerability to infections, particularly infections of the urinary system(18)

Our study reported that 21.21% girls believed that they should not enter the place of worship and offer prayers during menstruation while a previous study conducted in west Bengal reported the same belief for 76.96% of urban girls and 78.57% of rural girls (14) . Another study reported that 92% of the girls were not allowed to enter the place of worship(15). The previous studies suggested that a big majority of the girls followed restrictions which varied from 64.7 %(14) to 85%(11). A significant majority 56% of girls avoided eating pickles and tamarind products during menstruations(15). Some of the restrictions practiced by females as per our study included avoid eating curd, pickles and tamarind (35.35%) and avoid washing hair (13.13%) during periods. There are some other restrictions on menstruating woman like exercise, swim, dance, and sports etc. as suggested by 19.19% respondents. In a previous study 33.14 % were restricted for playing outside, and 10.67 % skipped attending schools(14) while our study suggested that 17.17% had to skip school or work-related task. This suggests an increasing trend in missing schools or work during menstruations which require attention from policy makers and educational institutions for making the infrastructure hygienic and girls friendly. All the restrictions practiced by most of the girls could be, possibly due to their false believe and lack of adequate knowledge regarding menstruation. Literature suggests that adolescent girls' reproductive health knowledge, including menstruation, is not acquired in a systematic fashion, and so it may be incomplete and influenced by socio-cultural barriers(19).

This study suggested that during menstruation, around 62.62 % of females feel cramps/pain, 59.59% have anger or mood issues, 35.35% experience sadness, hopelessness, and 27.27% have itching or rashes in intimate body parts, 16.16 % have odor or smell concerns, 37.37% experienced nausea, digestive issues, and exclusion from family, etc. The previous studies suggested that due to prolonged bed rest, missing social activities/commitments, interrupted sleep, and decreased food, 60% girls' daily routines were disrupted, 17.24% had to skip a class, and 25% had to take time off from work (8).It is important to note here that menstrual difficulties that go unaddressed can have a negative impact on one's daily routine and quality of life(20) thus require immediate attention. Adolescent girls should be examined for menstruation-related issues and given counselling and information on possible treatment choices. Furthermore, a focus on establishing menstrual health programme for teenagers is required(21). It is known that girls take information about menstruation through their mothers, siblings, or friends which is not adequate and sufficient. Other than this

if a girl goes to school, then it also plays a significant role in creating the knowledge base. Hence there is a knowledge gap that needs to be filled. Women having the correct knowledge and proper information are not only healthy but are less prone to any type of reproductive tract infection.

Menstrual products such as menstrual cups and tampons are generally ignored in research conducted in Indian settings. Studies from other countries suggests that menstrual cups were accepted by Nepalese and Kenyan schoolgirls(20, 21) and may be cost-effective. The acceptance and feasibility of its use may be studied in Indian setting in future research.

CONCLUSION

Addressing issues related to menstruation and menstrual hygiene are important in order to ensure the health and safety of adolescent girls. Research shows that there are many physical and emotional concerns experienced by young girls in India. So, in order to address the needs of the young girls and ensure equal participation of healthy women we need to initiate adolescents' health clinics with major focus on improving quality of life of young girls during the challenging days. Adolescents need to be guided through scientific evidence to shed off their perceptions, baseless restrictions and promote best hygienic practice. The large-scale workshops, seminars, school and community level awareness programmes will help to ensure that relevant and adequate information reaches the young mind.

Limitations: Due to lockdown restrictions, data was collected through telephonic interviews restricting the scope of sample size and in-depth information. Since sample had to be drawn using non-probability methods, thus, the study presents only descriptive information about awareness and perception of adolescents with regard to menstrual hygiene and inferential statistics is out of the scope of this research.

Conflict of Interest: None

Acknowledgement: We thank NSS volunteers of Dr. Bhim Rao Ambedkar College for assisting us in data collection. Our special thanks are due to Riya and Grecy Prabhakar for coordinating volunteers with research team.

Appendix 1: Favourable and Unfavourable reasons for menstrual concerns

Concern	Favorable reasons	Unfavorable reasons
A woman bath daily	To keep body clean, maintain body hygiene, control foul smell, feel fresh, relaxing, prevent bacterial growth in intimate parts	Stomach swelling may occur, Bleeding flow may become low, it's completely individual's choice
Frequent change of sanitary napkin brand	Quality matters, its uncomfortable, may create rashes or other harm to intimate parts	One may decide according to one's pocket expenses, depends on everyone's choice and needs, how does it matter all products are same, may develop pain, no side effects its matter of comfort
Use of high liquid intake	Keeping oneself hydrated, fresh, relax, aids digestion, maintain energy level,	Increase blood flow, drinking warm water reduces pain, to clean and purify the stomach, blood purification, helps to maintain anger and anxiety, makes blood flow smooth, reduces chance of swelling,
Use of carbonated drinks, coffee products	Must avoid as it causes gastric troubles	Everything is fine but not caffeine because it will increase the problem; cold products should be avoided as it increases the pain, may increase blood flow
Menstruating woman is impure	Its natural and biological process, we must not hide or feel ashamed about it	Because blood is impure, one release some sort of negative energy during periods
Menstruating women should not offer prayers	It's just a myth, God never asked us not to pray for Him we created these beliefs. Its one's own wish, no scientific proof for this, Because prayers have no connection with menstruation and it depends on people's believes. Faith is subjective, She can offer if she wants to	I personally believe that menstruating woman should not offer prayers and I don't have a reason for the same, as my mother believe it so do I, because we are impure during periods, because our society believe it so we need to follow, because at that time one is impure and according to Hindu mythology and religious practices one is not allowed to pray during those days, It's a ritual to be followed in my home, so I have to follow it
Menstruating woman should not enter place of worship	It's a natural process, it's our choice, our rights, It's not mention anywhere and not even religious books, It's a myth and misinterpreted by people.	Because we are impure, because society believe it so we follow, because mother has asked not to do so, It's a ritual and we all need to follow that
Contact or shadow of menstruating woman may spoil pickles, wine or bread	A woman is not a pesticide, she is a Normal human being, so it's again a myth.	Yes, I have noticed it, it happened in my home, Pickles may get spoiled, but not sure for bread and wine
Avoid eating curd, pickle, tamarind during periods	It depends on body to body, because some may experience some health issues, because at that time body is comparatively weak	Yes, it may give cramps, it may result in blood related problems, blood flow may increase, induces pain in stomach or aggravates pain, because it is advisable to avoid these products specially dairy, because it contains some bacteria that can harm us during those time, as these items can affect our periods
Mensurating woman should not wash hair	Washing hair is important as It's good for feeling fresh	To maintain that PH level in the body, In my family this is being followed, so I do the same, but according to me in general a person can wash her hair during periods.
menstruating girl/woman should exercise/swim/dance/sports	Some yoga practice is really good for reducing pain, increases blood circulation in body, maintain good health	No, it may increase pain and other problems, makes one uncomfortable, it will increase the flow, No hard core exercises

REFERENCES

1. World Health Organization. Adolescence: a period needing special attention: WHO; 2014 [Available from: https://apps.who.int/adolescent/second-decade/section2/page1/recognizing-adolescence.html.
2. Ramya S. A Cross Sectional study on Menstrual Hygiene Practices among Adolescent Girls in Tribal Population in Tamilnadu: Stanley Medical College, Chennai; 2020.
3. Dehne KL, Riedner G. Adolescence — a dynamic concept. Reproductive Health Matters. 2001;9(17):11-5.
4. Yerpude PN, Jogdand KS, Jogdand M. A study of health status among school going adolescents in South India. Int J Heal Sci Res. 2013;3:8-12.
5. Miiro G, Rutakumwa R, Nakiyingi-Miiro J, Nakuya K, Musoke S, Namakula J, et al. Menstrual health and school absenteeism among adolescent girls in Uganda (MENISCUS): a feasibility study. BMC Women's Health. 2018;18(1):4.
6. Akpenpuun JR, Azende P. Menstrual knowledge and practices among adolescents females in Makurdi Metropolis. GJISS. 2014;3(3):113-21.
7. Dambhare DG, Wagh SV, Dudhe JY. Age at menarche and menstrual cycle pattern among school adolescent girls in Central India. Glob J Health Sci. 2012;4(1):105-11.
8. Omidvar S, Amiri FN, Bakhtiari A, Begum K. A study on menstruation of Indian adolescent girls in an urban area of South India. Journal of family medicine and primary care. 2018;7(4):698.
9. Sharma S, Maheshwari S, Kuwatada J, Shekhar C, Mehra S. Inequalities in the reproductive health knowledge and practices of unmarried adolescent boys and girls in Eastern India: a cross-sectional survey. 2021.
10. Singh A. Place of menstruation in the reproductive lives of women of rural North India. Indian Journal of Community Medicine. 2006;31(1):10.
11. Dasgupta A, Sarkar M. Menstrual hygiene: how hygienic is the adolescent girl? Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2008;33(2):77.
12. Oakley A. Essays on women, medicine & health: Edinburgh University Press; 2019.
13. International Institute for Population Sciences. National Family Health Survey 2015 – 16. In: Health Mo, editor. Mumbai, India: Government of India; 2017.
14. Paria B, Bhattacharyya A, Das S. A comparative study on menstrual hygiene among urban and rural adolescent girls of west bengal. J Family Med Prim Care. 2014;3(4):413-7.

15. Nair P, Grover VL, Kannan A. Awareness and practices of menstruation and pubertal changes amongst unmarried female adolescents in a rural area of East Delhi. Indian journal of community medicine. 2007;32(2):156.
16. Narayan K, Srinivasa D, Pelto P, Veerammal S. Puberty rituals, reproductive knowledge and health of adolescent schoolgirls in South India. Asia-Pacific Population Journal. 2001;16(2):225-38.
17. Devi KD, Ramaiah PV. A study on menstrual hygiene among rural adolescent girls. Indian journal of medical sciences. 1994;48(6):139-43.
18. Thakre SB, Thakre SS, Reddy M, Rathi N, Pathak K, Ughade S. Menstrual hygiene: knowledge and practice among adolescent school girls of Saoner, Nagpur district. J Clin Diagn Res. 2011;5(5):1027-33.
19. Reed BG, Carr BR. The normal menstrual cycle and the control of ovulation. South Dartmouth (MA): MDText.com, Inc.; 2015.
20. Sharma A, Taneja DK, Sharma P, Saha R. Problems related to menstruation and their effect on daily routine of students of a medical college in Delhi, India. Asia Pacific Journal of Public Health. 2008;20(3):234-41.
21. Sharma P, Malhotra C, Taneja D, Saha R. Problems related to menstruation amongst adolescent girls. The Indian Journal of Pediatrics. 2008;75(2):125-9.