

## Knowledge, Attitude, and Practices about Menstrual Hygiene among Tribal Adolescent Girls of Raigad district in Maharashtra, India

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### Abstract

**Introduction:** In light of the universal experience of menstruation among girls, it remains concerning that there exists a dearth of awareness regarding the menstrual process and appropriate menstrual hygiene practices, particularly among adolescent girls hailing from tribal backgrounds. The objective of our study was to evaluate menstruation-related knowledge and practices in adolescent girls belonging to a tribal community. **Materials and Methods:** The present research employed a community-based cross-sectional design. The study sample comprised 400 tribal adolescent girls aged between 13 and 18. The participants were purposefully selected from different schools in the Raigad district of the Maharashtra state. A predeveloped and validated questionnaire guide was employed to evaluate the knowledge and practices about menstruation. The data was subsequently analyzed using appropriate statistical tests. **Results:** The average age of menarche was 14.2 years. Notably, a mere 36% of the participants had prior awareness of menstruation before experiencing menarche. Among those who were aware, the primary source of information on menstruation was their friends, accounting for about 43% of respondents, followed by mothers. Most participants believed that they should avoid visiting holy places (67.75%), relatives, friends, or neighbors (57.75%) during menstruation. They also felt that they should not perform household activities (54.25%), bathe daily (44.75%), or practice isolation during their menstrual period (59.25%). The majority of the adolescent girls followed unhygienic practices during menstruation. **Conclusions:** Tribal adolescent girls exhibit a notable lack of knowledge regarding menstruation. Furthermore, their practices surrounding menstruation are influenced by a range of myths and misconceptions.

**Keywords:** Menstruation, Adolescent, Female, Menarche, India

### Introduction

Adolescence in girls is widely acknowledged as a significant phase marking the transition from girlhood to womanhood. Within Indian society, menstruation is commonly associated with notions of impurity. Consequently, menstruating girls often face isolation and encounter various restrictions imposed upon them within their families, which contribute to the perpetuation of negative attitudes towards menstruation among girls. It is important to note that the perception regarding menstruation varies across diverse religion and culture<sup>(1)</sup>.

Numerous studies have documented the presence of various restrictions on the daily activities of menstruating girls. These restrictions include being prohibited from bathing, changing clothes, combing hair, and being forbidden from entering holy places. Additionally, dietary restrictions are imposed during menstrual period, including taboos on consuming certain foods such as milk and milk products products lik, curd, lassi; other items like rice, potato, sugarcane and onion. These restrictions contribute to the development of unnecessary anxiety as well as fear among girls. This may further lead to the adoption of undesirable practices<sup>(2-5)</sup>.

A particular study reported that 43.7% of the girls refrained from participating in ceremonies; in contrast, 36.2% girls abstained from engaging in social activities with their families while menstruating<sup>(6)</sup>. These findings shed light on the influence of cultural norms on the perceptions surrounding menstruation. Furthermore, the reaction to menstruation is modulated by cultural concepts as well as it is influenced by awareness and knowledge in the subject. For instance, a study in West Bengal conducted on 160 girls revealed that 67.5% of them were aware of menstruation, with a similar percentage being aware of it before experiencing menarche. However, a striking 97.5% participants were unaware of the origin of menstrual bleeding<sup>(7)</sup>.

In Nepal, a survey conducted among 204 adolescent girls revealed that 92% of them were familiar with the concept of menstruation. However, the majority of the participants expressed a lack of preparedness for their initial menstruation experience<sup>(8)</sup>. Within the *Gujjar* community, a Semi-nomadic tribal group residing in the Jammu and Kashmir region, it was commonly believed that menstruation served as a means of purging the body from harmful blood to prevent infections<sup>(9)</sup>.

Adolescent girls in rural and tribal communities face barriers in obtaining accurate and relevant information about menstruation due to social prohibitions and the reluctance of parents to discuss such matters openly. Consequently, their access to appropriate knowledge is impeded. Moreover, their deep-rooted adherence to traditional beliefs, taboos, and misconceptions surrounding menstruation contributes to significant health challenges. Inadequate personal hygiene practices and unsanitary conditions during menstruation exacerbate the prevalence of various gynecological problems among these girls<sup>(10)</sup>. Several studies have documented instances of infections resulting from poor menstrual hygiene<sup>(11-13)</sup>.

Utilizing unclean cloth during menstruation, coupled with inadequate drying practices before reuse, facilitates the proliferation of microorganisms. Consequently, vaginal infections have become prevalent among adolescent girls. A survey conducted on this matter revealed that girls cited various reasons for unuse of sanitary pads. These encompassed lack of awareness regarding their availability (41%), high cost (39%), limited accessibility (33%), and inadequate disposal facilities (24%)<sup>(8)</sup>. The findings from focus group discussions indicated that girls expressed a preference for disposable pads due to their enhanced comfort, reduced odor, ease of use, and portability<sup>(8,14)</sup>.

Although literature exists regarding the health and social challenges in developing countries associated with menstruation, including India, there is a scarcity of information concerning menstrual hygiene in tribal adolescent girls in Raigad district of Maharashtra. In light of these circumstances, the current study was designed to investigate the knowledge and practices concerning menstruation among adolescent girls from the *Katkari* tribe residing in the tribal region in and around Chindran village in the Maharashtra state of India. The purpose of selecting Chindran village and the area around it was that this area was tribal.

## Material and Methods

### *Study setting and sample size*

The study was conducted in the high schools in the Raigad district of Maharashtra state. Specifically, 12 villages, including Chindran village and its surrounding areas, were chosen as research sites as these regions have the maximum adolescent girls population and are located in the tribal regions. This cross-sectional study encompassed a cohort comprising 400 adolescent girls hailing from the *Katkari* tribe. The sample size estimation was derived using a 50%

proportion, a 95% confidence interval, and a 5% margin of error, resulting in an estimated sample size of 385. The study was conducted in compliance with ethical guidelines<sup>(15,16)</sup>.

### *Inclusion and exclusion criteria*

A total of 400 students were selected using purposive sampling from 5 different schools out of 15 schools approached. The sample comprised adolescent girls aged between 13 and 18 who were studying in the 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> standards. Students with significant psychiatric or physical illnesses, those with a family history of mental illness, and school dropouts were excluded from participation in the study.

### *Data Collection and Methodology*

Data collection was performed through face-to-face interviews utilizing a pre-validated questionnaire. The questionnaire was constructed based on relevant and recent studies conducted in the same field<sup>(17,18)</sup>. Each interview lasted approximately 7-10 minutes and was conducted by an Assistant Professor of Community Medicine and Senior residents with an MD degree in community medicine. The interviews took place in a school classroom setting. The questions were primarily multiple-choice close-ended and focused on various aspects, including basic demographics, social history, understanding of the menstruation process, knowledge about menstrual hygiene practices, cultural beliefs and conceptions related to menstruation, and attitudes towards menstrual periods and hygiene. The questionnaire was reviewed and validated by five subject experts in community medicine and was pilot-tested (Cronbach's alpha 0.88). Significant information and feedback were provided to the girls whenever necessary, to enhance their understanding and awareness.

### *Statistical analysis*

An experienced statistician, along with the authors, conducted data entry and analysis. The data entry process was meticulously managed using Microsoft Excel to ensure accuracy and consistency. Data validation was done to identify and rectify any discrepancies. The quantitative data obtained were analyzed and expressed as frequencies and percentages. The team's combined expertise ensured that the data was accurately processed and interpreted.

## Results

The average age of menarche was 14.2 years. Notably, a mere 36% of the participants had prior awareness of menstruation before experiencing menarche. Among those who were aware, the primary source of information on menstruation was their friends, accounting for about 43% of respondents, followed by mothers (Table 1).

**Table 1: Socio-demographic and menstrual characteristics of study participants**

Variable	n (%)
<b>Age (in years)</b>	
13	88 (22)
14	86 (21.50)
15	96 (24)
16	92 (23)
17	38 (9.50)
<b>Presently Studying in</b>	
VIII <sup>th</sup> standard	100 (25)
IX <sup>th</sup> standard	116 (29)
X <sup>th</sup> standard	184 (46)
<b>Marital Status</b>	
Unmarried	384 (96)
Married	10 (2.50)
Widowed	4 (1)
Divorced	2 (0.50)
<b>Education of Mother</b>	
Illiterate	44 (11)
Primary	118 (29.50)
High school	196 (49)
Higher secondary and above	42 (10.50)
<b>Type of family</b>	
Nuclear	286 (71.50)
Joint	112 (28)
<b>Per capita Income (in Indian Rupees)</b>	
≤ 2000	170 (42.50)
2001-5000	94 (23.50)
5001-10000	78 (19.50)
>10000	58 (14.50)
<b>Age at menarche (in years)</b>	
< 9	12 (3)
9-11	66 (16.50)
11-13	214 (53.50)
>13	108 (27)
<b>Duration of menstrual cycle</b>	
< 21 days	22 (5.50)
21-28	246 (61.50)
>28	132 (33)
<b>Duration of menstrual blood loss</b>	
<3 days	14 (3.50)
3-7 days	200 (50)
>7days	186 (46.50)
<b>Attended previous class on menstruation</b>	
Yes	142 (35.50)
No	258 (64.50)

The participants' knowledge about menstruation is summarized in Table 2. Before menarche, only 36.25% (n=145) were aware of menstruation, with friends, mothers, sisters, relatives, neighbors, and teachers as their primary information sources. Notably, 59.50% (n=238) did not know the source of menstrual blood, and 66.75% (n=267) considered menstrual blood impure. Furthermore, 62.75% (n=251) believed that hot and cold foods affect menstruation, and only 34.25% (n=137) correctly identified that excessive bleeding could cause anemia.

**Table 2: Knowledge about menstruation in study participants**

Variable	n (%)
<b>Aware about menstruation before menarche</b>	
Yes	145 (36.25)
No	255 (63.75)
<b>Source of information about menstruation before menarche</b>	
Mother	62 (15.50)
Teacher	26 (6.50)
Friend	171 (42.75)
Sister	57 (14.25)
Neighbors	39 (9.75)
Relatives	45 (11.25)
<b>Knowledge of the organ from which menstrual blood comes</b>	
Urethra	45 (11.25)
Vagina	32 (8)
Uterus	35 (8.75)
Ovary	50 (12.50)
Don't Know	238 (59.50)
<b>Thought menstrual blood to be impure</b>	
Yes	267 (66.75)
No	133 (33.25)
<b>Believed that hot and cold foods influence menses</b>	
Yes	251 (62.75)
No	149 (37.25)
<b>Knew that excessive bleeding leads to anemia</b>	
Yes	137 (34.25)
No	263 (65.75)
<b>I knew that menses are absent during pregnancy</b>	
Yes	129 (32.25)
No	271 (67.75)
<b>Thought that it was all right to have sex during menses</b>	
Yes	115 (28.75)
No	285 (71.25)

Table 3 details the participants' attitudes and perceptions about menstruation. Reactions to their first menses included feelings of dirtiness, weirdness, and anger about gender differences. Regarding sanitary pad advertisements, 35.25% (n=141) felt embarrassed, 24.25% (n=97) felt shy and preferred to change the channel in front of males, and 15.25% (n=61) thought such advertisements should be banned.

Additionally, 41.25% (n=165) found menstrual hygiene programs somewhat helpful. Most participants believed they should avoid visiting holy places (67.75%), relatives, friends, or neighbors (57.75%) during menstruation. They also felt they should not perform household activities (54.25%), bathe daily (44.75%), or practice isolation during their menstrual period (59.25%).

**Table 3: Attitude and perception about menstruation in study participants**

Variable	n (%)	Variable	n (%)
<b>Do you think menstrual blood is impure?</b>		<b>Can you visit holy places during menstruation?</b>	
Yes	267 (66.75)	Not much use	61 (15.25)
No	133 (33.25)	Completely useless	44 (11)
<b>Reaction of girls following first menses</b>		Cannot say	51 (12.75)
Felt dirty	127 (31.75)	<b>Can you visit relatives/friends and neighbors during menses?</b>	
I felt angry that why only girls should have menses while boys don't	82 (20.50)	Yes	129 (32.25)
Felt weird	90 (22.50)	No	271 (67.75)
It felt good that they grew up	56 (14)	<b>Can you do household activities during menses?</b>	
No reaction	45 (11.25)	Yes	169 (42.25)
<b>Reactions of girls on seeing sanitary pad advertisements on television</b>		No	231 (57.75)
Feel shy in front of male members and feel like changing the channel	97 (24.25)	<b>Should you practice isolation during menses?</b>	
Feel Informative	55 (13.75)	Yes	221 (55.25)
Feel embarrassed	141 (35.25)	No	179 (44.75)
Such advertisements should be banned	61 (15.25)	<b>Should you bathe daily during menses?</b>	
No Reaction	46 (11.50)	Yes	163 (40.75)
<b>Reactions of girls on attending menstrual hygiene related program.</b>		No	237 (59.25)
Of great use	79 (19.75)		
Somewhat useful	165 (41.25)		

Table 4 details the menstruation practices among the study participants. A slight majority (54.25%) reported washing their genital area whenever they changed their pad or cloth, primarily using only water (72.35%). Most used cloth for menstrual hygiene, with only 35.25% (n=141) using sanitary pads. The primary reasons for not using sanitary pads were high cost, shyness, unavailability, and lack of knowledge. Among cloth users, 47.49% (n=123) did not change it during

the day, and 55.98% (n=145) washed and reused the same cloth, typically using only water and sun drying. Disposal methods for cloth included throwing it on the road or outside. For those using sanitary pads, some did not change them regularly. Disposal methods for sanitary pads included wrapping them in plastic and discarding them on the road or outside, in house dustbins, or latrines.

Table 4: Practices during menstruation in study participants

Variable	n (%)	Variable	n (%)
<b>Do you wash your genitalia area whenever you change the pad or cloth?</b>		<b>How do you wash the cloth?</b>	
Yes	217 (54.25)	Soap & Water	102 (39.38)
No	183 (45.75)	Only water	157 (60.62)
<b>What do you use for washing genitalia?</b>		<b>How do you dry the cloth?</b>	
Only water	157 (72.35)	House dry	100 (38.61)
Soap and water	60 (27.65)	Sun Dry	159 (61.39)
<b>Do you dry the genital area after washing?</b>		<b>When do you finally dispose of the cloth?</b>	
Yes	137 (63.13)	after one month	28 (10.81)
No	80 (36.87)	Two months	36 (13.90)
<b>What do you use during menses?</b>		Three months	121 (46.72)
Cloth	259 (64.75)	Six months	63 (24.32)
Sanitary Pad	141 (35.25)	One year	11 (4.25)
<b>Reasons for not using a sanitary pad</b>		<b>How do you dispose of the cloth?</b>	
Lack of knowledge	28 (10.81)	Throwing into dustbin	43 (16.60)
High cost	120 (46.33)	Burning	71 (27.41)
Unavailability	43 (16.60)	Throwing on the road/outside	145 (55.98)
Shyness	68 (26.25)	<b>If using a Sanitary Pad</b>	
<b>If using cloth-</b>		<b>How many times do you change the sanitary pad?</b>	
<b>Type of Cloth?</b>		No change	56 (39.72)
Terry cotton	37 (14.29)	Once	38 (26.95)
Nylon	62 (23.94)	Two times	25 (17.73)
Cotton	128 (49.42)	Three times	14 (9.93)
Don't know	32 (12.36)	More	8 (5.67)
<b>How often do you change your clothes in a day?</b>		<b>In what do you wrap the pad while disposing of it?</b>	
No change	123 (47.49)	Paper	17 (12.06)
Once	61 (23.55)	Plastic	85 (60.28)
Two times	37 (14.29)	Cloth	39 (27.66)
Three times	28 (10.81)	<b>Where do you dispose of the sanitary pad?</b>	
More	10 (3.86)	House dustbin	26 (18.44)
<b>Do you wash and reuse the same cloth?</b>		Road/outside	94 (66.67)
Yes	145 (55.98)	Latrine	21 (14.89)
No	116 (44.79)	<b>Have you ever flushed a sanitary pad in a toilet?</b>	
		Yes	26 (18.44)
		No	115 (81.56)



## Discussion

Menstruation is widely recognized as a natural physiological process occurring in individuals with female reproductive systems. However, it has been detected that inadequate hygiene practices or unhealthy behaviors during menstruation can lead to significant health issues, including but not limited to reproductive tract infections and urinary tract infections. This study was cross-sectional community-based research on 400 tribal adolescent girls aged between 13 and 18. It was aimed at assessing knowledge, attitudes, and practices regarding menstruation.

In most of the participants, the menarche age was about 14 years. This finding was in agreement other similar studies conducted in various parts of the country reporting 13–14 years as the mean age of menarche in various communities (urban, rural, and tribal)<sup>(17-20)</sup>.

The majority of girls were not aware of menstruation before menarche. Among the identified sources of information, it was observed that friends accounted for the highest. This finding supports many previous studies that have consistently indicated that adolescent girls primarily rely on various sources, including mothers, teachers, friends, relatives, television, and books, for obtaining information about menstruation<sup>(21,22)</sup>. It is worth noting that in some cases, even mothers may lack comprehensive knowledge about menstruation, resulting in hesitancy when discussing menstrual issues faced by their daughters<sup>(23)</sup>. Comparable studies conducted in Egypt<sup>(24)</sup> and Pakistan<sup>(25)</sup>, have also reported a lack of proper information sources available to adolescent girls concerning menstruation. The study revealed a notable absence of conceptual and scientific clarity regarding menstruation among the study participants. These findings are consistent with several other studies<sup>(17,18)</sup>.

Menstrual hygiene remains a sensitive and often unspoken topic, particularly in South Asia, where many women feel uncomfortable discussing it openly. The practices related to menstrual cycle in adolescent girls in this region are influenced by various cultural beliefs and factors such as education, family environment, culture, and personal beliefs, as demonstrated in a study conducted in Ranchi<sup>(26)</sup>. Additionally, religion is a significant determinant affecting the practices associated with menstruation<sup>(27)</sup>. These findings align with previous studies<sup>(5)</sup> including the present research, which have reported similar results regarding the existence of various restrictions and limitations related to menstruation. Notably, cultural beliefs surrounding menstruation predominantly dictate negative guidance for girls, specifying how they should conform to these beliefs<sup>(28)</sup>.

The level of personal hygiene during menstruation maintained by the participants included in the sample was inadequate and unsatisfactory. A study<sup>(29)</sup> corroborated this finding, revealing that many women in rural Bangladesh, India, and Nepal rely on reusable cloth materials, typically obtained by tearing old *saris* and commonly referred to as "*Nekra*," for menstrual blood absorption. The reuse of used cloth for this purpose was observed across the study population. Similar observations have been reported in other studies as well<sup>(12,13)</sup>. A study in rural Gujarat, which focused on the menstrual hygiene practices of adolescent tribal girls, observed that these girls had to perform daily activities like bathing, washing used clothes early dawn, even before other family members would wake up<sup>(30)</sup>. It is recommended that sanitary napkins should not be worn for more than four hours, particularly during the initial days when the menstrual flow is heavy. Failure to change pads regularly can result in leakage and an unpleasant odor, highlighting the importance of frequent pad changes and maintaining hygiene during this period<sup>(31)</sup>. Additionally, proper hygiene in the genital area is crucial. Research has demonstrated that inadequate washing of the perineal region during menstruation may increase the risk of cervical cancer<sup>(32)</sup>.

This study has several limitations. It was confined to high schools in the Raigad district, focusing on 12 villages, and only included adolescent girls from the *Katkari* tribe, limiting generalizability. The cross-sectional design captures only a single point in time, and the purposive sampling method may introduce selection bias. Excluding students with significant physical or psychiatric illnesses or a family history of any mental illness may overlook essential variations. Although the questionnaire was pre-validated, it may cover only some aspects comprehensively.

## Conclusion

This KAP (Knowledge, Attitudes, and Practice) study underscores a substantive lacuna in comprehending menstrual health among adolescent cohorts, notably within *Katkari* tribal areas in India. This deficiency is accentuated by a prevailing reticence among parents to initiate dialogues concerning menstruation. The imperative nature of adolescent education on this subject cannot be overstated, as it is a pivotal measure in averting infections and optimizing holistic health outcomes. These discernments substantiate the exigency for nuanced interventions and policy formulations to augment menstrual health literacy, specifically among adolescent females inhabiting these indigenous communities.

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**Sources of funding:** Nil

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#### Ethical consideration

Institutional Ethics Committee Approval was taken. Written informed consent was obtained from the parents of the participating students, and appropriate assent was obtained from the participating girls.

#### Authors' Contribution

AT: Conceptualization and designing of the research study, Data collection, literature search, implementation, statistical analysis, interpretation and manuscript writing, reviewing and approving the final version of the manuscript; RD: Conceptualization and designing of the research study, Data collection and analysis, interpretation and manuscript writing, reviewing and approving the final version of the manuscript.

#### Data Availability statement

Data will be available with corresponding author on request.

#### References

1. Sonowal P, Talukdar K. Menstrual hygiene knowledge and practices amongst adolescent girls in urban slums of Dibrugarh town – A cross-sectional study. *Gal Int J Heal Sci Res.* 2019 Mar;4(March):44-51.
2. Sharma S, Mehra D, Brusselaers N, Mehra S. Menstrual hygiene preparedness among schools in India: A systematic review and meta-analysis of system-and policy-level actions. *International Journal of Environmental Research and Public Health.* 2020 Jan;17(2):647.
3. Deshpande TN, Patil SS, Gharai SB, Patil SR, Durgawale PM. Menstrual hygiene among adolescent girls – A study from urban slum area. *Journal of Family Medicine and Primary Care.* 2018 Nov 1;7(6):1439-45.
4. Mahon T, Fernandes M. Menstrual hygiene in South Asia: A neglected issue for WASH (water, sanitation and hygiene) programmes. *Gender & Development.* 2010 Mar 1;18(1):99-113.
5. Singh AJ. Place of menstruation in the reproductive lives of women of rural north India. *Indian Journal of Community Medicine.* 2006 Jan 1;31(1):10-14.
6. Santina T, Wehbe N, Ziade F, Nehme M. Assessment of beliefs and practices relating to menstrual hygiene of adolescent girls in Lebanon. *Int J Health Sci Res.* 2013 Dec;3(12):75-88.
7. Dasgupta A, Sarkar M. Menstrual Hygiene: How Hygienic is the Adolescent Girl? *Indian Journal of Community Medicine.* 2008 Apr 1;33(2):77-80.
8. NPWaterAid, Kathmandu. Is menstrual hygiene and management an issue for adolescent school girls?: a comparative study of four schools in different settings of Nepal. *WaterAid.* 2009 Mar 1; pp. 1-24. Available from: [https://irp-cdn.multiscreensite.com/521dc4d3/files/uploaded/Wateraid\\_menstrual-hygiene-school-adolescencegirls-Nepal\\_2009.pdf](https://irp-cdn.multiscreensite.com/521dc4d3/files/uploaded/Wateraid_menstrual-hygiene-school-adolescencegirls-Nepal_2009.pdf). Accessed on 29 Apr 2024.
9. Dhingra R, Kumar A, Kour M. Knowledge and Practices Related to Menstruation among Tribal (Gujjar) Adolescent Girls. *Studies on Ethno-Medicine.* 2009 Jan 1;3(1):43-48.
10. Bhatia JC, Cleland J. Self-reported symptoms of gynecological morbidity and their treatment in south India. *Studies in family planning.* 1995 Jul 1;26(4):203-16.
11. Paul D. A Report of an ICMR Funded Research Project: Knowledge and Practices of Adolescent Girls Regarding Reproductive Health with Special Emphasis on Hygiene during Menstruation. New Delhi: National Institute of Public Cooperation and Child Development (NIPCCD); 2007:1-98.
12. Greene EM. *Watering the Neighbours Garden.* New Delhi: Population Council (Working Paper. No. 7); 1997.
13. Mehra S. *Adolescent Girl: An Indian Perspective.* New Delhi: Mamta Health Institute for Mother and Child; 1995.
14. Juyal R, Kandpal SD, Semwal J, Negi KS. Practices of menstrual hygiene among adolescent girls in a district of Uttarakhand. *Indian Journal of Community Health.* 2012 Jun 30;24(2):124-28.
15. Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Participants. The World Medical Association. 2008. Available from: <https://www.wma.net/wp-content/uploads/2016/11/DoH-Oct2008.pdf>. Accessed on 02 May 2024.
16. World Health Organization. WHO technical report series 931: WHO expert consultation on rabies; first report. Geneva, Switzerland: WHO; 2005;13.
17. Kumari S, Sood S, Davis S, Chaudhury S. Knowledge and practices related to menstruation among tribal

- adolescent girls. *Industrial Psychiatry Journal*. 2021 Oct 1;30(Suppl 1):S160-65.
18. Jose S, Sindhu K. A Study to Assess the Knowledge Regarding Menstrual Hygiene and Menstrual Hygiene Practices among Tribal Adolescent Girls Residing in Selected Tribal Colonies of Kannur District. *International Journal of Scientific Research*. 2020 Dec;9(12):33-37.
  19. Vaidya RA, Shringi MS, Bhatt MA, et al. Menstrual pattern and growth of school girls in Mumbai. *Journal of family welfare*. 1998;44:66-72.
  20. Singh UP, Shukla BR. Trend of menarche in five endogamous groups of Tharu tribal female of Uttar Pradesh. *Man in India*. 1992 Sep 1;72(3):343-52.
  21. Deo DS, Ghattargi CH. Perceptions and practices regarding menstruation: a comparative study in urban and rural adolescent girls. *Indian Journal of Community Medicine*. 2005 Jan 1;30(1):33.
  22. Kothari B. Perception about menstruation: A study of rural Jaipur, Rajasthan. *Indian Anthropologist*. 2010 Jan 1;40(1):43-54.
  23. Garg S, Sharma N, Sahay R. Socio-cultural aspects of menstruation in an urban slum in Delhi, India. *Reproductive Health Matters*. 2001 Jan 1;9(17):16-25.
  24. El-Gilany AH, Badawi K, El-Fedawy S. Menstrual hygiene among adolescent schoolgirls in Mansoura, Egypt. *Reproductive Health Matters*. 2005 Jan 1;13(26):147-52.
  25. Ali TS, Rizvi SN. Menstrual knowledge and practices of female adolescents in urban Karachi, Pakistan. *Journal of Adolescence*. 2010 Aug 1;33(4):531-41.
  26. Kumar A, Srivastava K. Cultural and social practices regarding menstruation among adolescent girls. *Social Work in Public Health*. 2011 Sep 15;26(6):594-604.
  27. Bramwell R, Zeb R. Attitudes towards and experience of the menstrual cycle across different cultural and religious groups. *Journal of Reproductive and Infant Psychology*. 2006 Nov 1;24(4):314-22.
  28. McPherson ME, Korfine L. Menstruation across time: menarche, menstrual attitudes, experiences, and behaviors. *Womens Health Issues*. 2004 Nov 1;14(6):193-200.
  29. Ahmed R, Yesmin K. Menstrual hygiene: breaking the silence. *Beyond construction: Use by all. A collection of case studies from sanitation and hygiene promotion practitioners in South Asia*. London: WaterAid. 2008 Mar 1:283-7.
  30. Shah SP, Nair R, Shah PP, Modi DK, Desai SA, Desai L. Improving quality of life with new menstrual hygiene practices among adolescent tribal girls in rural Gujarat, India. *Reproductive Health Matters*. 2013 Jan 1;21(41):205-13.
  31. Nagaraj C, Konapur KS. Effect of health education on awareness and practices related to menstruation among rural adolescent school girls in Bengaluru, Karnataka. *Int J Prev Public Health Sci*. 2016 May;2:18-21.
  32. Maree JE, Wright SC. Sexual and menstrual practices: Risks for cervix cancer. *Health SA Gesondheid*. 2007 Sep 1;12(3):55-65.