

Mapping the Knowledge, Attitude, and Practices of Menstrual Hygiene Management among Adolescent Girls in Rural West Bengal

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Abstract : According to WHO and UNICEF Joint Monitoring Programme (JMP) for drinking water, sanitation, Menstrual Hygiene Management (MHM) refers to 'Women and adolescent girls using a clean menstrual management material to absorb or collect menstrual blood, that can be changed in privacy as often as necessary for the duration of a menstrual period, using soap and water for washing the body as required, and having access to safe and convenient facilities to dispose of used menstrual management materials as well as understanding of the basic facts linked to the menstrual cycle and how to manage it with dignity and without discomfort or fear'. Menstrual hygiene constitutes an integral part of the health of adolescent girls and therefore has direct implications on their reproductive health. MHM is not only determined by availability of safer absorbent materials, adequate Water, Sanitation and Hygiene (WASH) and adequate disposal facilities but also guided by existing social norms and taboos. Present article attempts to investigate into the knowledge, attitude and menstrual hygiene practices among rural adolescent girls of Bankura district. A total of 900 girls and their mothers (900) were interviewed during the survey carried out in three selected C.D blocks namely Bankura-II, Sarenga and Mejia of Bankura district. The study is based on qualitative and quantitative analysis.

Knowledge, Attitude, Practice score (KAP score) has been constructed to analyze the knowledge, perception and menstrual hygiene behavior among sample population. Focus group discussions ((FGDs) were conducted to expose some of the complex, subtle aspects of the topic of interest, which would not have surfaced during a personal interview. Result from the analysis shows that there is dearth of adequate and accurate knowledge about menstruation and its accurate management among the adolescent girls. Attitude towards menstruation is mostly negative across communities and are mostly controlled by norms and taboos. Significant proportion of girls use safer method of menstrual protection however; disposal of absorbents remains a serious challenge. KAP score indicates age, religion and place of residence to be important determinants of MHM practices among girls.

Key words: Knowledge, Attitude and Practice (KAP), Menstrual Hygiene Management (MHM), KAP Score

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Introduction

Menstrual cycle is an integral part of the reproductive health of a woman. Almost half of the world's population experiences menstruation for a significant part of their life. Adequate hygiene management during menstruation plays a vital role in enabling adolescent girls to reach their full potential. Menstrual hygiene management (MHM) requires the provision of material resources to absorb menstrual flow, arrangements for maintaining personal hygiene, and disposal of menstrual waste with privacy and dignity (Sahin, 2015). The unmet menstrual needs of women and girls also known as 'period poverty' is widespread and include the inability to access safe and clean facilities and affordable menstrual protection (Kuhlmann et. Al., 2019). According to the estimates of the World Bank, worldwide 500 million women and girls lack provisioning of adequate facilities for menstrual hygiene management (The World Bank, 2018). Initially, in a large part of the developing world, the use of feminine sanitary items was promoted through various government interventions. But tackling 'period poverty' is far more complicated and challenging than merely providing cheap or free sanitary napkins. It is not only about inaccessibility or non-affordability of the commercial menstrual products, but it is also about dealing with the social stigma attached to menstruation (Cousins, 2020). Therefore myths and misconceptions regarding menstruation must be addressed. In India, several myths and social taboos are associated with menstruation, and it is considered as something impure, unclean, and dirty (Prajapati, 2015). Socio-cultural beliefs associated with menstruation in rural and backward societies have prolonged impacts on the behavior, emotions, self-confidence, and health of adolescent girls. Such beliefs and taboos exclude menstruating girls from socio-cultural events (Lawan et al, 2010).

The use of sanitary menstrual products has increased manifolds in recent years (NFHS, 2019-20). Lack of WASH (Water, Sanitation, and Hygiene) facilities and proper waste management solutions has emerged as a major challenge in managing menstrual needs with dignity. Literature on MHM practices in India is mostly limited to the studies conducted in urban areas and educational institutions. There is a dearth of literature based on studies from rural settings in underdeveloped regions. This paper attempts to explore the knowledge, attitude, and practices of menstrual hygiene among adolescent girls in rural pockets of Bankura district, which is one of the less developed areas of West Bengal. It also tries to identify the barriers in adopting appropriate menstrual hygiene management (MHM) practices. This paper also tries to investigate the differentials in knowledge, attitude, and practice across space and communities.

Methods and Materials

A cross-sectional study was conducted by interviewing 900 adolescent girls using a pre-designed and pre-tested structured questionnaire in rural areas of three blocks, namely Bankura-II, Sarenga, and Mejia of Bankura district. The survey was conducted to collect information for the set of variables related to knowledge,

attitude, and practices regarding menstruation. Interviews were conducted at their place of residence of participants. While interviewing the respondents' privacy was maintained throughout the survey.

The inclusion criteria for sample selection were that the girls have to be in the age bracket of 10 to 18 years and should have attained menarche. Another criterion was the willingness of respondents to participate in the study. Primary survey for data collection was accomplished during December, 2020 to January, 2021.

Questionnaire and Score Grading

Knowledge, Attitude and Practice (KAP) score has been constructed to assess the knowledge, perception and practices on menstruation and hygiene management behavior of the sample population. For this purpose, a set of questions were selected from the questionnaire and categorized into three broad themes namely: Knowledge, Attitude, and Practices (KAP) related to menstruation. A total of 21 variables were chosen to estimate the Knowledge Score, Attitude Score, and Practice Score (7 variables for each category). Highest score has been given to the accurate answer while score '0' is assigned to the incorrect answer. Age of the respondents, religion and C.D block has been chosen to represent three predictor variables i.e demographic, locational and socio-cultural factors.

The following grading method was used for each variable in this KAP questionnaire:

- In the Knowledge Section, the score of 1 was given for the correct answers, and 0 for the incorrect answers.
- In the Attitude Section, score 2 was given for the positive answers, score 1 for neutral answers, and 0 for the negative answers.
- In the Practice Section, the score of 2 was given for the proactive answers, 1 for neutral answers, and 0 for passive answers.

Results

In the present study, a total of 900 adolescent girls (age 10-19 years), who have already reached menarche, were selected for the interview. Majority of adolescent girls were in the age group of 14-16 years in each block. Mean age of the respondents was 15.87 (S.D. ± 1.85) in Bankura II, 15.55 (S.D. ± 2.07) in Sarenga, and 15.84 (S.D. ± 1.86) in Mejia blocks of Bankura district. Mean age at menarche was 12.62 (SD ± 1.20) in Bankura II, 12.73 (SD ± 1.61) in Sarenga and 12.90 (SD ± 1.29) in Mejia blocks. More than 85% of adolescent girls were enrolled in high school. Majority of the mothers were found to be illiterate. The participants comprised of diverse religious communities however, most of the participant girls belonged to the Hindu religion. Statistically, about 41% of the household have monthly income below Rs. 5000 in Sarenga and Mejia block. Nevertheless, in Bankura II block majority of the household falls under the income bracket of Rs. 5000-10000 per

month. Availability of basic household amenities for maintaining hygiene and sanitation is as low as 16-17%.

Knowledge of Menstruation

Knowledge related to menstruation was assessed by a set of seven questions. The responses received from the participants against each question were classified as per their accurate knowledge about menstruation.

K1 variable investigates the cause of menstruation. The result shows that three out of five girls are unaware of the causes of menstruation. One out of ten girls considers menstruation as a 'Curse of God'. K2 variable result shows that about three-fourth of participants is ignorant about the organ from which menstrual fluid is released. K3 variable result indicates knowledge on the ideal duration of the use of a single menstrual absorbent at a stretch. Over 6 out of 10 girls i.e., a considerable majority of them remarked the ideal duration to be up to 8 hours. K4 variable probes on the methods of washing and drying of reusable cloth absorbent. The result shows that most of the girls have accurate knowledge of the agent used to wash the reusable cloths. About 87% of them pointed out that soap and water should be used for washing reusable cloths. Reusable sanitary items may increase the likelihood of causing health hazards if not properly sanitized. The most effective way to sanitize these items is to wash them thoroughly with soap and water and subsequently dry them under direct sunlight. K5 variable has registered responses about the place of drying of reusable absorbents. About 71% of respondents have provided the correct answer i.e. outdoor- under direct sunlight. K6 variable collected responses about the appropriate places of disposing of the soiled absorbents. Around 61% of the participants admitted that menstrual protection items should be disposed of by burning or burying it in a deep pit. Menstrual waste poses to be a source of environmental pollution and a potential health hazard therefore accurate information on appropriate disposal mechanisms is essential for preventing these problems. K7 variable is related to the knowledge of respondents on the treatment of menstrual morbidities. About 83% of the sampled population confirmed that menstrual problems must receive treatment from trained health professionals.

Attitude towards Menstruation

Seven questions were asked to determine the attitude of respondents mainly towards cultural norms regarding menstruation. These responses are categorized as Positive, Negative, and Neutral. Score 2 is given for positive attitude, 1 for neutral, and 0 for a negative attitude.

Variable A1 seeks to find out the perception of purity and pollution associated with menstruation. The survey unfolded that the majority of adolescent girls (61%) regard menstruation as something dirty and impure. Variable A2 looks into the attitude regarding offering prayer and entering into religious places. It was observed that respondents have a very negative attitude towards it. About 92% of the

Table 1: Knowledge Score of Menstruation

Questions related to knowledge about Menstruation	Answer by the Respondent	Score based on the Correct Answer	% (N= 900)
K-1: What is the cause of menstruation?	● Hormones ● Curse of God ● Any other ● Don't know	❖ Correct/1 ❖ Incorrect/0 ❖ Incorrect/0 ❖ Incorrect/0	39.4% (355) 9.9% (89) 1% (9) 49.7%(447)
K-2: Can you identify the organ from which menstrual blood originates?	● Uterus ● Birth Canal ● Abdomen ● Don't know	❖ Correct/1 ❖ Incorrect/0 ❖ Incorrect/0 ❖ Incorrect/0	23.0 %(207) 4.7%(42) 7.3%(65) 65%(585)
K-3: How long a single piece of sanitary absorbent should be used?	● Up to 8 hours ● 8-12 hours ● More than 12 hours	❖ Correct/1 ❖ Incorrect/0 ❖ Incorrect/0	66.8%(600) 28.7%(258) 4.5%(41)
K-4: Which agents should be used for washing reusable cloth absorbent?	● Only water ● Water and soap ● Any other	❖ Incorrect/0 ❖ Correct/1 ❖ Incorrect/0	9.7%(87) 87.4%(787) 2.9%(26)
K-5: Where should reusable absorbents be dried?	● Indoor ● Outdoor-under direct sunlight ● Outdoor-not under direct sunlight	❖ Incorrect/0 ❖ Correct /1 ❖ Incorrect/0	9.5%(86) 71.3%(642) 19.1%(172)
K-6: Where should used menstrual items be discarded?	● Dustbin/Burn/ Bury in deep pit) ● Backyard ● In open field ● Near or in a water body ● Others	❖ Correct/1 ❖ Incorrect/0 ❖ Incorrect/0 ❖ Incorrect/0 ❖ Incorrect/0	61.1%(550) 6.5%(58) 5.7%(51) 18.8%(169) 8.0%(72)
K-7: Do the menstrual problems need treatment from health professionals?	● Yes ● No	❖ Correct ❖ Incorrect	82.66% (744) 17.33% (156)

participants reported that girls must not enter the temple/shrine during the periods. Further, one-third of the participants reported that they are susceptible to get possessed by an evil spirit during menstruation (A3). Variable A4 examines the girls' attitude towards participating in certain physical activities during their menses. It was observed that the majority of the girls had a negative attitude towards involvement in physical activities during menstruation.

Menstruation is considered a matter of shame and silence. Religion norms and cultural taboos have further reinforced the myths and misconceptions about periods. More than one-third of the respondents (A5) believe that norms and taboos

Table 2: Attitude Score towards Menstruation

Questions related to Attitude	Answer by the Respondent	Score based on the Correct Answer	% (N 900)
A-1: Menstruation dirty and impure	● Agree ● Disagree ● Don't know	❖ Negative/0 ❖ Positive/2 ❖ Neutral/1	61% (549) 39% (351) 0%(0)
A-2: Girls must not enter temple/ shrine during periods	● Agree ● Disagree ● Don't know	❖ Negative/0 ❖ Positive /2 ❖ Neutral/1	92.3% (831) 7.6% (69) 0% (0)
A-3: Menstruating girls are more susceptible to get possessed by evil spirits	● Agree ● Disagree ● Don't know	❖ Negative/0 ❖ Positive /2 ❖ Neutral/1	34.2% (308) 54.3% (489) 11.4% (103)
A-4: Girls must not engage themselves in physical activities during periods	● Agree ● Disagree ● Don't know	❖ Negative/0 ❖ Positive /2 ❖ Neutral/1	79.6% (716) 17.6% (158) 2.9% (26)
A-5: Norms and taboos regarding menstruation can be questioned	● Agree ● Disagree ● Don't know	❖ Positive /2 ❖ Negative/0 ❖ Neutral/1	38.55%(347) 37.11%(334) 24.33%(219)
A-6: It is important to talk about menstruation with men	● Agree ● Disagree ● Don't know	❖ Positive/2 ❖ Negative/0 ❖ Neutral/1	29.0% (261) 60.7% (546) 10.3% (93)
A-7: It is important to talk about menstruation with boys in the school or other community gathering	● Agree ● Disagree ● Don't know	❖ Positive/2 ❖ Negative/0 ❖ Neutral/1	40.66% (366) 48.0% (432) 11.33% (102)

regarding menstruation cannot be questioned. Variable A6 and A7 explore attitudes towards open conversation with men or boys about menstruation. About 60% of total respondents said that it is not important to talk about menstruation with men, and around 50% of them have the notion that it should not be discussed with the boys in school or community gatherings.

Practices score of menstrual hygiene management

Practices score of menstrual hygiene has been assessed by seven questions. The response given by the participants is classified as proactive, neutral, and passive practice. Variable P1 is related to the absorbent used by adolescent girls during periods. The %age of girls using sanitary napkins was found to be very high (81%) in the studied area. Similarly, most of the girls (80.3%) change their sanitary pads two or more times a day (Variable P2). Variable P3 seeks information on the disposal practices of the respondents. Disposal of menstrual absorbent was found to be highly passive among respondents. Only 16.7% of girls correctly dispose of menstrual waste. A significant proportion of girls discard off absorbent items in nearby ponds or rivers. Variable P4 looks into the kind of material used to wrap menstrual waste. The use of paper for wrapping used items is considered a proactive practice as the paper is biodegradable. Only 32% of total adolescent girls used paper for wrapping the used material. Variable P5 indicates that a considerable proportion of girls (84%) use soap and water to wash reusable clothes. Variable P6 enquired on the place for drying of reusable items and Variable P7 gives an insight on frequent cleaning of the genital area during periods. Analysis shows that adolescent girls are less proactive in this regard. Only 3 out of ten girls dry reusable items in direct sunlight and approximately two out of ten girls clean their genital area frequently.

KAP Score by Age group, Religion, and Community Development Block

Knowledge score by different groups

Data on knowledge, attitude, and practice of menstrual hygiene have been classified into three groups; namely age groups, religious groups, and place of residence. It was found that the girl having the age of 14 years and above have a significantly higher score for K1, K2, and K3 variables compared to the girls below 14 years of age. It was also observed that the girls who belonged to the Hindu religion had significantly higher knowledge score than the Muslim and Christian girls. Christian girls were having a significantly higher knowledge score than their counterparts for the K4 variable. Bankura-II block achieved a significantly higher knowledge score (K1) than the other two blocks. Sarenga block recorded a significantly higher knowledge score than its counterparts for K2, K3, K4, K5, and K6 variables.

Table 3: Practice Score of Menstrual Hygiene

Questions related to Practice about Menstruation	Answer by the Respondent	Score based on the Correct Answer	% (N 900)
P-1: Absorbent used during menstruation	● Sanitary Napkin ● Cloth ● Combination of sanitary napkin & cloth ● No absorbent used	❖ Proactive/2 ❖ Neutral/1 ❖ Neutral /1 ❖ Passive/0	80.7% (726) 10.7% (96) 8.3%(75) 0.3%(3)
P-2: Frequency of changing menstrual absorbents	● Twice or More ● Once ● Don't change	❖ Proactive /2 ❖ Neutral /1 ❖ Passive /0	80.3% (723) 7.7% (69) 3.7% (33)
P-3: Disposal practices of soiled menstrual absorbents	● Correct ● Incorrect	❖ Proactive /1 ❖ Passive /0	16.7% (150) 83.3% (750)
P-4: Wraps used for disposing of soiled menstrual absorbents	● Paper ● Plastic ● No wrap	❖ proactive/2 ❖ Neutral /1 ❖ Passive/0	32.0% (288) 49.0% (441) 19.0%(171)
P-5: Agents for washing of reusable menstrual items	● Water and Soap ● Only water	❖ Proactive/1 ❖ Passive/0	84.2% (144) N=171 15.8% (27)
P-6: Place of drying of reusable menstrual items	● Indoor ● Outdoor under direct sunlight ● Outdoor under not direct sunlight	❖ Passive /0 ❖ Proactive/2 ❖ Neutral/1	15.9%(27) N=171 30.9%(53) 53.2%(91)
P-7: Genital area cleaned frequently during periods?	● Yes ● No	❖ Proactive /1 ❖ Passive /0	18.7%(168) 81.3%(732)

Attitude Score by Different Groups

Table 5 reflects that the Attitude Score was higher for the girls in the age bracket of 14-19 years than those who were below 14 years of age. Christian girls attained significantly higher attitude score than Hindu and Muslim girls for A3, A4, and A5 variables. While Attitude score for variables A6 and A7 was higher among Hindu girls than the counterparts. Bankura-II block registered a significantly higher attitude score for A1, A3, and A4 than the rest of the blocks. Girls residing in the

Table 4 Knowledge Score by different groups

Variable	Age				Religion				Block					
	10-14 N=246	Above 14 N=654	χ^2	ρ	Hindu N=750	Muslim N=114	Christian N=36	χ^2	ρ	Bankura II N=300	Sarenga N=300	Mejia N=300	χ^2	ρ
K-1 Score	70 (28.5%)	285 (43.9%)	30.021	0.000	311 (41%)	33 (29%)	11 (30%)	64.044	0.000	150 (50%)	126 (42%)	79 (26%)	60.614	0.000
K-2 Score	20 (8.1%)	187 (28.8%)	34.029	0.000	180 (24%)	23 (20.1%)	4 (11.1%)	41.638	0.239	63 (21%)	95 (31.6%)	49 (16.3%)	75.182	0.000
K-3 Score	150 (61%)	450 (68.8%)	28.754	0.001	511 (68.1%)	70 (61.4%)	19 (52.7%)	59.487	0.000	182 (60.6%)	224 (74.7%)	194 (64.7%)	65.159	0.000
K-4 Score	206 (83.7%)	581 (89.6%)	5.334	0.376	659 (87.8%)	95 (83.3%)	33 (91.6%)	65.983	0.000	243 (81%)	275 (91.7%)	269 (89.7%)	53.086	0.000
K-5 Score	160 (65%)	482 (74.3%)	10.386	0.320	550 (73.3%)	66 (57.8%)	26 (72.2%)	101.921	0.000	209 (69.7%)	225 (75%)	208 (69.3%)	68.541	0.001
K-6 Score	143 (58.1%)	407 (62.8%)	8.570	0.285	464 (61.8%)	66 (57.9%)	20 (55.5%)	64.945	0.000	187 (62.3%)	196 (65.3%)	167 (55.7%)	88.203	0.000
K-7 Score	170 (69.1%)	574 (90.5%)	14.485	0.755	625 (83.3%)	90 (78.9%)	29 (80.5%)	98.644	0.000	261 (87%)	255 (85%)	228 (76%)	44.627	0.213

Table 5: Attitude Score by Different Groups

Variable	Age			Religion				Block						
	10-14 N=246	Above 14 N=654	χ^2	ρ	Hindu N=750	Muslim N=114	Christian N=36	χ^2	ρ	Bankura II N=300	Sarenga N=300	Mejia N=300	χ^2	ρ
A-1 Score	64 (26%)	287 (43.8%)	7.719	0.259	285 (38%)	35 (29.9%)	31 (86.1%)	8.396	0.754	129 (43%)	120 (40%)	102 (34%)	62.962	0.000
A-2 Score	11 (4.4%)	58 (8.9%)	9.437	0.024	36 (4.8%)	3 (2.6%)	30 (33%)	6.844	0.336	30 (10%)	21 (7%)	18 (6%)	6.705	0.876
A-3 Score	93 (37.8%)	396 (60.5%)	5.129	0.527	410 (54.6%)	53 (46.4%)	26 (72.2%)	75.358	0.000	183 (61%)	180 (60%)	126 (42%)	83.651	0.000
A-4 Score	20 (8.1%)	138 (21.1%)	8.019	0.155	132 (17.6%)	18 (15.7%)	8 (22.2%)	28.872	0.000	75 (25%)	42 (14%)	41 (13.7%)	37.560	0.010
A-5 Score	87 (35.6%)	260 (39.8%)	11.468	0.075	285 (38.0%)	45 (39.4%)	17 (47.2%)	65.247	0.000	114 (38%)	121 (40.5)	111 (37%)	66.280	0.000
A-6 Score	69 (28%)	192 (29.4%)	2.863	0.581	231 (30.8%)	21 (18.4%)	9 (25%)	23.922	0.008	93 (31%)	111 (37%)	57 (19%)	68.024	0.000
A-7 Score	78 (31.7%)	288 (52.7%)	17.690	0.221	322 (42.9%)	30 (26.3%)	14 (38.8%)	9.815	0.001	129 (43%)	120 (40%)	117 (39%)	8.788	0.985

Table 6: Practice Score by different groups

Variable	Age			Religion				Block						
	10-14 N=246	Above 14 N=654	χ	ρ	Hindu N=750	Muslim N=114	Christian N=36	χ	ρ	Bankura II N=300	Sarenga N=300	Mejia N=300	χ	ρ
P-1 Score	202 (81.1%)	526 (80.6%)	18.279	0.019	626 (83.4%)	71 (62.2%)	29 (80.5%)	34.383	0.354	255 (85%)	240 (80%)	231 (77%)	35.288	0.004
P-2 Score	185 (77.4%)	538 (83.1%)	33.645	0.070	609 (81.2%)	85 (74.5%)	29 (80.5%)	32.885	1.000	252 (84%)	246 (82%)	225 (75%)	56.090	0.146
P-3 Score	30 (12.2%)	120 (18.4%)	5.479	0.602	125 (16.7%)	18 (15.8%)	7 (19.4%)	17.863	0.001	57 (19%)	51 (17%)	42 (14%)	16.437	0.287
P-4 Score	63 (25.6%)	225 (39.9%)	49.881	0.030	248 (33.0%)	23 (20.1%)	17 (47.2%)	31.262	0.000	126 (42%)	99 (33%)	63 (21%)	20.418	0.000
P-5 Score	33 (13.4%)	111 (19.7%)	97.728	0.216	104, N=171 (78.8%)	33 (76.7%)	7 (100%)	32.582	0.000	37 (88%)	52 (86.7%)	55 (79.7%)	92.402	0.164
P-6 Score	13 (24.2%)	40 (23.4%)	68.363	0.047	41 (31%) N=171	8 (28.5%)	4 (36.3%)	90.534	0.000	15 (35.6%)	20 (33.3%)	18 (26%)	26.165	0.019
P-7 Score	38 (15.4%)	130 (23.0%)	19.096	0.024	142 (18.9%)	17 (14.9%)	9 (25.0%)	30.392	0.001	66 (22%)	57 (19%)	45 (15%)	25.797	0.104

Sarenga block had significantly higher attitude score for A5 and A6 than their counterparts.

Practice Score by Different Groups

Table 6 shows that the age of the respondents had no significant impact on the practice score of menstrual hygiene. It was observed that Christian adolescent girls had a significantly higher score than Hindu and Muslim girls for P4, P5, P6, and P7 variables. Muslim girls attained significantly lower score than non- Muslim girls for P1 and P4 variables. Girls who were residing in the Bankura-II block had significantly higher practice score than the girls who belonged to other blocks, for P1 and P4 variables.

Comparison of Knowledge, Attitude and Practice Score Among Different Groups

Table 7 depicts the overall comparison of Knowledge, Attitude, and Practice Score among different groups. The table indicates that attitude score is comparatively higher for the adolescent girls who have attained the age of 14 and above. Knowledge and practice score is higher for Hindu and Christian girls. Respondents from the Bankura-II block scored higher knowledge and practice score than the other blocks.

Table 7: Comparison of Knowledge, Attitude and Practice Score among different groups

Variables	N	Knowledge			Attitude			Practice		
		$\bar{x} \pm s$	<i>T</i>	<i>p</i>	$\bar{x} \pm s$	<i>t</i>	<i>P</i>	$\bar{x} \pm s$	<i>t</i>	<i>P</i>
Age			2.151	0.143		10.69	0.001		2.62	0.009
10-14	246	3.30 $\pm$ 1.43			4.12 $\pm$ 2.23			3.93 $\pm$ 2.63		
14 & above	654	3.47 $\pm$ 1.63			4.81 $\pm$ 2.52			4.63 $\pm$ 1.97		
Religion			3.849	0.004		0.850	0.494		1.574	0.080
Hindu	750	3.44 $\pm$ 1.58			4.62 $\pm$ 2.53			4.73 $\pm$ 1.74		
Muslim	126	3.40 $\pm$ 1.51			4.67 $\pm$ 1.97			4.12 $\pm$ 1.16		
Christian	34	2.87 $\pm$ 1.54			4.12 $\pm$ 2.30			4.53 $\pm$ 2.36		
Block			9.33	0.000		2.328	0.98		3.653	0.030
Bankura II	300	3.62 $\pm$ 1.60			4.84 $\pm$ 2.41			4.86 $\pm$ 2.16		
Sarenga	300	3.55 $\pm$ 1.59			4.41 $\pm$ 2.74			4.13 $\pm$ 2.36		
Mejia	300	3.11 $\pm$ 1.50			4.69 $\pm$ 2.19			3.92 $\pm$ 1.97		

Discussions

This study empirically explored various aspects of menstrual hygiene management, an important issue for the rural adolescent girls in the state of West Bengal. Findings of the study regarding knowledge of menstrual hygiene show that very few of the adolescent girls were aware of the physiology of menstruation and menstrual hygiene practices. Similar findings were also discussed in the study conducted in Nepal and Karnataka in India (Adhikari, 2007, Khan, 2012). Focused Group Discussion (FGD) revealed that teachers skipped specific topics related to the human reproductive system. Without any guidance, it was difficult for them to understand the functions of bodily organs and reproductive processes. In other cases, these topics were not explicitly explained in the classroom settings. Information on hygienic management of the reproductive process is not in the school curriculum however adolescent girls gain some knowledge from elder female family members, peer groups, and mass media.

Discussion with girls indicates that mothers and friends were the first points of contact after menarche. Girls having peer groups as the source of information revealed that the idea of menstruation was limited to the process of vaginal bleeding without any elaborate scientific knowledge on the cause of menstruation. Mothers briefed them on how to handle menstrual absorbents and how to dispose it off. The discussions were usually focused on the restrictions that the girls have to follow throughout periods and also about socially accepted behavior of an adolescent girl. However, some respondents participated in awareness programs conducted in villages and schools, consequently received better insight on the issue.

Lack of proper dissemination of information on MHM is reflected in poor knowledge of girls on this issue. Prolonged use of feminine pads or cloths may result in an increased risk of infections and menstrual morbidities. The present study indicates that one out of three girls is uninformed on the recommended duration of use of a single absorbent material. It puts them at the risk of unhygienic handling of their menstruation. Eight out of ten girls were aware of the agents used for cleaning reusable cloth pieces. Similarly, a significant proportion of girls also knew that the reusable items should be dried under direct sunlight. Another important component of MHM is the proper disposal of menstrual waste. Only three out of five girls were aware of the fact that it must be burned or buried in a deep pit. In a nutshell, it can be said that girls were found to have partial knowledge of menstrual hygiene management.

Attitude regarding MHM is found to be largely influenced by socio-cultural norms. In most of the culture, menstruating women and girls are considered to be impure and are prohibited from taking part in devotional activities. The notion of pollution and restriction on visiting religious places as well as performing certain rituals are very much interrelated. Three out of five girls perceived menstruation as

impure, and nine out of ten girls believed that they must abstain from entering religious places. Similar superstition on the susceptibility of getting possessed by evil spirits during periods was found to be prevalent among adolescent girls (34.2%). These findings are in line with the study conducted in Delhi (Rastogi et. al. 2019).

Norms regarding menstruation are deep-rooted in our society and are transferred from one generation to another. One-third of the girls were convinced that norms regarding menstruation should be carried out and must not be questioned, besides one-fourth of respondents were confused on this matter. However, 38.55% respondents reported of following the restrictions unwillingly due to societal pressure, and the authenticity of the norms must be questioned. They are of the opinion that the authenticity of beliefs and norms influencing matters related to menstruation must be investigated.

These norms and beliefs impose various restrictions on menstruating women and girls at the same time it is also considered as a process that should be kept private, especially from boys and men (Stubbs, 2008, White, 2013). Consequently, male involvement in MHM is completely missing in Indian society. Its impact can be realised at two levels- firstly, women are often excluded from making the intra-household decision on allocation of resources therefore need for intimate hygiene management often remains unmet. Secondly, the continuation of cultural norms that stigmatize menstruation, keeps girls under psychological stress to conceal the evidence of menstruation in household and community environment. Father-daughter conversation on menstruation may provide a feasible solution to these problems. In our study, less than one-third of the sampled population considered that it can be discussed with men. Most of the girls enrolled in co-ed schools expressed that boys need to be sensitized to menstruation. They usually ridicule girls for having periods which brings embarrassment to them. Girl's inability to maintain their dignity is partially contributed to the lack of understanding and empathy of boys towards menstruating girls.

Throughout the life course, gender-specific norms regulate the behaviour of women. Gender norms and menstrual norms are often found to be interlinked. After reaching puberty adolescent girls face increasing pressure to practice culturally sanctioned behaviour, which is stereotyped as 'feminine'. This is one of the reasons for adolescent girls refraining from certain physical activities. Besides, it is also believed that physical activities during menses may be detrimental to their health. A significant number of girls avoid certain physical activities when they are menstruating. In a similar study conducted in Taiwan, it was also found that menstruation was bothersome and tiresome for girls and that they did not want to engage themselves in any physical activity when they are on their periods (Lu, 2001). The interrelation between physical activities and their impact on the health of menstruating girls needs to be explored further. It is often propagated that certain light exercises and *yogasanas* can reduce physical and psychological discomfort caused by menstruation.

Knowledge and attitude have a strong correlation with the hygiene behavior of adolescent girls. The practice of hygiene management during menstruation is considered to be of utmost importance given that it has a long-term effect on the health of adolescent girls. Widespread use of sanitary napkins was found in the target population. More than 80% of the participants were exclusively using sanitary napkins while 8.3% used a combination of cloths and sanitary napkins. The result of the present study on the use of feminine products resonates with the findings from the previous study (Juval et al. 2013, Thakre, 2012). The uses of sanitary pads are extensively promoted by the government through awareness programs and free distribution of napkins under the 'Freedays' scheme. Durability and convenience in handling pads have been cited as the main reason for preferring these products. Besides, it was also observed that there has been a sea change in the menstrual hygiene product landscape. Sanitary pads are easily accessible in rural settings, barring some exceptions in the Mejia block. However, this does not guarantee informed choice on menstrual protection. Focused discussion with girls indicates that girls don't have access to alternate commercial feminine items which are available in the product landscape. Informed choice signifies that females have comprehensive knowledge about menstrual protection items available including their pros and cons, hygienic use, and appropriate disposal practices. It also indicates that women and girls are equipped to make a choice on the type of item they want to use, given their needs and also considering the socio-economic conditions.

The use of cloth for collecting menstrual flow is considered as unhygienic and unsafe. In fact, it is not the usage of cloth pieces that is unsafe but it is the associated practice and behavior. The frequency of changing menstrual protection has been registered to be high in the sample population. Similarly, a large proportion of girls using old cloth pieces clean it with soap and water. Drying under the sun is also essential to ensure appropriate hygienic management of reusable items. Nevertheless, two-third of the respondents using cloth pieces dried them either in the dark corner of the house or hide them under other items while drying in an open space. Similar results have been found in some other studies (Dasgupta et al, 2008, Ahmed, et al, 2008, Dhingra et al, 2009). Such practices can lead to extensive growth of pathogens and resultant infections to the users.

The risk of microbial growth and environmental pollution is elevated if disposal facilities are insufficient or poor. Disposal practice of used absorbent was found to be very poor among the surveyed population. It was found that most of the girls disposed of used absorbents in the nearby water bodies. These sites have multiple functions for the community like bathing, laundering, and cleaning utensils, etc. In one of the villages, it was found that drinking water is also fetched from the same river which also serves as a disposal site for menstrual waste. In the conversation, some girls acknowledged that it must not be discarded in water bodies (mainly in the pond sides) or open spaces but due to lack of proper disposal facility they are confined to these options. The absence of waste management solutions is a major

challenge in maintaining hygienic practices in the villages. One of the main constrain is the lack of WASH facilities in the household environment. The majority of the participants depend on these water bodies to meet their WASH-related needs. It is convenient for them to discard the soiled items with maintaining a certain degree of privacy. Frequent cleaning of the genital area is reported by only 18% of participants. It does not align with preceding studies (Yasmin et al, 2013, Nair et al, 2019). Lack of privacy and supportive infrastructure restrain them from repeated cleaning of the genital area during menstruation.

Knowledge, perception, and behavior of MHM practices vary across space and cultures. Evidence from the present cross-sectional study indicates that age is an important demographic determinant controlling menstrual hygiene management practices among adolescent girls. Girls in the higher age bracket (14 and above) possess better knowledge, positive attitude, and safe menstrual practices than their counterparts. Younger girls have limited mental capacity to completely understand menstruation-related matters. Hygiene management skills gradually develop as they gain experience in handling their periods. Besides, older girls are more comfortable and confident in dealing with their situation compared to their counterparts.

Religion is another important predictor of MHM practices. In most of the societies, menstrual practices are still largely governed by religious customs and beliefs. Attitude towards menstruation does not demonstrate a significant association with religion, while menstrual practices are found to be considerably diverse by religious groups. It was found that the practice score was comparatively higher for Hindu adolescent girls than the Muslim and Christian girls.

Geographic location also determines the menstrual behavior of women and girls. From the study, it was found that the knowledge and practice score about menstruation was higher in the Bankura-II block than Sarenga and Mejia block. Spatial variations can be explained in terms of differentials in social, cultural, and economic settings in the surveyed blocks. Bankura II block has the locational advantage of being positioned in close proximity to the district headquarter and hence have better facilities than other blocks.

Conclusion

Most of the adolescent girls are partially informed about menstruation and accurate hygiene practices. Their knowledge and use of safe feminine hygiene product is only limited to sanitary napkins. Informed choices on menstrual hygiene materials must be ensured at the community level. Mothers being the main source of information, often pass inadequate knowledge along with myths and taboos. Menstrual education must encompass both genders in society and also community influencers. Gender sensitization on menstruation must be promoted for empowering girls to handle their periods with dignity. Attitude towards menstruation is mostly negative across communities. Poor knowledge and negative attitude are more pronounced in younger girls than older ones. The needs of younger adolescent

girls must be addressed by the effective implementation of multilevel health programs. Education interventions in the Bankura district have not resulted in considerable declines in restrictions among adolescent girls during their periods. Practices related to menstruation are proactive in terms of uses of unconventional sanitary absorbents, although disposal of used menstrual absorbents is highly passive. The unmet need for WASH and disposal facility is apparent from the disposal behavior of girls and poor hygiene practices. Disposal practices are not only unhygienic and unhealthy for girls but also hazardous to the environment. Programs at grass root level should be focused on disseminating menstrual education and providing supportive infrastructure, particularly eco-friendly disposal and WASH facilities.

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