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School-based intervention and its effect on menstrual awareness of rural and tribal adolescent girls

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Abstract

Background: Menstruation is an important phenomenon in a part of an adolescent girl's life. It is essential that the aspects of such an important phenomenon should be known to them but unfortunately the situation has not much improved and the lack of awareness related to menstruation still prevails among the adolescent girls. The present study aimed at assessing the impact of a school based intervention on knowledge of rural and tribal adolescent girls on aspects of menstruation.

Material and Methods: The study adopted a cross-sectional approach with an experimental design and the intervention was given to the experimental groups. The total sample consisted of 480 school going adolescent girls between the age group of 12 to 18 years belonging to rural areas of Varanasi district and tribal regions of West Garo Hills of Meghalaya. A self structured interview schedule was used to collect data from the respondents before and after intervention. The intervention programme in the form of lectures, discussions, etc. was delivered for a period of three months in the selected schools. Paired t- test was applied on data for statistical analysis through SPSS software.

Results: The study revealed a notable deficiency in understanding certain aspects of menstrual awareness prior to the intervention. Both urban and rural respondents lacked knowledge regarding the significance of menstruation, with a prevalent misconception about the concept of 'bad blood' particularly among girls in rural areas. Additionally, respondents demonstrated a lack of knowledge regarding the origin or source of menstrual blood. However, they exhibited awareness regarding the duration of the menstrual cycle, menstrual flow, appropriate absorbents, and the frequency of changing sanitary napkins. Following the intervention, there was a substantial improvement in the awareness levels of respondents in both settings, as indicated by the post-test analysis ($p=0.001$).

Keywords: Adolescents, intervention, menstruation, reproductive health, awareness

Introduction

Adolescents comprise a significant portion of the global population, making up approximately 21% of India's populace. This phase is recognized as pivotal, marking the transition from childhood to adulthood, characterized by the emergence of secondary sexual characteristics (puberty) leading to sexual and reproductive maturity. Adolescence encompasses not only physical growth but also a plethora of emotional, psychological, and social changes. However, in India, particularly in rural areas, this critical stage is often overlooked, especially for adolescent girls who are considered vulnerable in terms of their health.

Menstruation stands out as a crucial and distinctive aspect of an adolescent girl's life. Unfortunately, in Indian society, it is often perceived as unclean and impure. Practices such as isolating girls and imposing restrictions during menstruation have perpetuated a negative perception of this natural process. Moreover, adolescent girls' vulnerability is exacerbated by a lack of knowledge regarding their health. They typically acquire information on reproductive health

through observation of adults, discussions with peers and older siblings, and exposure to media. Unfortunately, misinformation and ignorance prevail, compounded by the reluctance of parents and teachers to provide accurate information.

Understanding the timing and manner in which adolescent girls acquire knowledge is crucial for preparing them for future roles as parents and partners in marriage. Unfortunately, even information regarding physical maturation is frequently withheld within families under the misconception that silence will reinforce the taboo nature of the topic, preserve a child's innocence, and promote appropriate behavior. However, this silence contributes to the vulnerability of adolescent girls to various health-related risks and complications.

Research conducted by Mathiyalagen *et al.* highlighted a significant correlation between reproductive morbidity among adolescent girls and inadequate menstrual hygiene practices. This underscores the undeniable link between reproductive health issues and the lack of awareness among

respondents.

A significant portion of girls remain uninformed or poorly informed about menstruation until they experience it for the first time. This lack of knowledge stems from the societal taboo surrounding the topic, which often prevents open discussion within households. Consequently, many girls find themselves unprepared – lacking the necessary knowledge, skills, and confidence to manage their menstrual cycles effectively. Educating girls about menstruation and related topics is crucial for their health education, ensuring they maintain proper hygiene practices throughout their lives.

Despite various national and state-specific programs aimed at raising awareness about sexual and reproductive health among young people, a concerning level of unawareness persists. While India has made significant strides in adolescent health and development over the past two decades, numerous challenges persist for its youthful population. Research by Josephine *et al.* underscores the significant gaps in adolescents' knowledge regarding reproductive sexual health, with noticeable improvements seen post-educational interventions.

Targeting adolescents, particularly girls, at a young age through school and college-based population education programs is vital. Such initiatives not only foster awareness but also cultivate healthy attitudes toward their roles and relationships. Ensuring that young girls are well-informed about themselves and others is essential for leading healthy, responsible, and fulfilling lives, as well as protecting themselves from reproductive health issues. Moreover, this directly contributes to achieving MDG-2 on universal education and MDG-3 on gender equality and women's empowerment.

Despite the importance of such interventions, few studies have documented the impact of school-based interventions on menstrual health awareness among adolescent girls in rural and tribal populations. Thus, the present study aims to assess the menstrual health knowledge of adolescents in culturally diverse regions of Uttar Pradesh and Meghalaya, providing a comparative analysis, and evaluating the effectiveness of intensive interventions in a school-based setting.

Methodology

Study area: The study was conducted in specific regions of Uttar Pradesh and Meghalaya, chosen to reflect diverse cultural backgrounds. Uttar Pradesh is characterized by a predominantly patriarchal society, while Meghalaya is renowned for its matriarchal families, where children inherit their mothers' names and are primarily influenced by their maternal lineage.

Sample

Respondents were chosen from two states known for their diverse and distinct cultures: Meghalaya and Uttar Pradesh. Multi-level stratified sampling was employed for each state, beginning with the random selection of one district from each state, followed by the selection of blocks, and

ultimately the schools where the study took place. The sample comprised a total of 480 adolescent girls, with 240 girls from tribal backgrounds (selected from West Garo Hills district of Meghalaya) and 240 from rural backgrounds (selected from Varanasi district of Uttar Pradesh), drawn from various government schools in the designated district areas. The present study adopted a cross-sectional approach with an experimental design.

Tools: A self-structured interview schedule was utilized to collect data, comprising sections covering background information and specific details regarding knowledge about menstruation. Each participant was individually approached within the school premises, and the necessary information was obtained. Analysis of the baseline data revealed that although girls in the selected schools exhibited low levels of knowledge, two schools from each district, where the highest percentage of respondents displayed low knowledge levels, were ultimately chosen for the intervention program. Consequently, two schools from each district, with 240 girls in total, were designated as the control group, while the intervention was administered to the remaining 240 girls from both states (120 from each district) over a three-month period (Experimental group).

The intervention program entailed participatory sessions comprising lectures and discussions covering topics such as the menstrual process, physical changes during adolescence, and hygiene practices during menstruation. Post-testing was conducted one month after the conclusion of the intervention program to assess the impact and increase in knowledge levels. Respondents from the eight selected schools across both states were interviewed using the same interview schedule employed during the pre-testing phase.

Analysis

The data was coded, scored and compiled for final analysis through the use of SPSS (version 17.0). Appropriate statistical measures were applied to ascertain the impact of intervention.

Results

Socio-demographic profile

The socio-demographic characteristics of the respondents are outlined in Table 1. It is evident that the majority of respondents in both the tribal and rural areas fell within the age group of 15 to 16 years and were enrolled in the 11th and 12th standards, indicating education levels beyond high school. In terms of maternal education, the majority of mothers in both areas had attained education up to the upper primary level. A significant percentage of girls hailed from medium-sized families, typically comprising five to eight members, with a monthly household income ranging between Rs 5000/- to Rs 10000/-. Regarding caste composition within rural families, approximately 39.02 percent belonged to the Other Backward Classes (OBC) group, while all girls in rural areas were categorized under the Scheduled Tribe.

Table 1: Socio-demographic profile of rural and tribal respondents

Sl. No.	Categories	Rural (n = 240)	Tribal (n = 240)	Total (N = 480)
1.	Age			
	12 to 14 years	26.3	30.0	28.12
	14 to 16 years	45.8	42.5	44.46
	Above 16 years	27.9	27.5	27.7
2.	Education			
	Below High School	33.8	37.5	35.6
	High School	23.3	22.1	22.7
	Above High School	42.9	40.4	41.7
3.	Education of mothers			
	Illiterate	23.1	18.1	20.6
	Primary	16.8	15.5	16.2
	Upper primary	35.3	32.8	34.0
	High school	18.1	19.8	18.9
	Intermediate	2.5	10.8	6.6
	Graduate & Above	4.2	3.0	3.6
4.	Education of Father			
	Illiterate	1.8	2.7	2.2
	Primary	3.1	17.9	10.5
	Upper primary	33.8	26.8	30.3
	High school	30.2	19.6	24.9
	Intermediate	16.9	25.0	20.9
	Graduate & Above	14.3	8.1	11.2
5.	Family size			
	Small (1 – 4 members)	5.0	11.2	8.1
	Medium (5 to 8 members)	59.2	79.3	66.3
	Large (Above 8 members)	35.8	15.5	25.6
6.	Caste			
	General	22.1	-	11.0
	SC	38.8	-	19.4
	ST	-	100.0	50.0
	OBC	39.2	-	19.6
7.	Monthly income of families			
	Upto Rs 5000/-	2.1	36.7	19.4
	Rs 5001/- to Rs 10000/-	35.4	45.4	40.4
	Rs 10001/- to Rs 15000/-	32.1	11.7	21.9
	Above Rs 15000/-	30.4	6.3	18.3

Note: All figures in percentage

Awareness for menstruation and source of information:

As depicted in Table No. 2, the majority of rural and tribal respondents had limited or no prior awareness of menstruation before experiencing it firsthand, with some not even familiar with the term 'menstruation'. However, adolescent girls in tribal regions tended to possess slightly more awareness compared to those in rural areas. This discrepancy could stem from differences in socio-cultural environments, as tribal families typically exhibit greater

openness, with menstruation being less taboo as a topic of discussion. Conversely, mothers in rural families might encounter difficulties broaching the subject with their maturing daughters.

For most respondents in both regions, mothers served as the primary source of information regarding menstruation. Additionally, in tribal regions, friends also played a role as secondary sources of information regarding menarche.

Table 2: Awareness of respondents regarding menstruation prior to menarche

Categories	Rural		Tribal	
	Exp	Control	Exp	Con
Knowledge regarding menstruation prior to menarche				
Yes	24 (20.0)	27 (22.5)	41 (34.2)	40 (33.3)
No	96 (80.0)	93 (77.5)	79 (65.6)	80 (66.7)
Source of information				
Mother	11 (9.2)	19 (15.8)	21 (17.5)	10 (8.3)
Friends	4 (3.3)	2 (1.7)	11 (9.2)	22 (18.3)
Sisters	3 (2.5)	2 (1.7)	-	6 (5.0)
Others (Books, magazines, aunt, relatives, etc)	6 (5.0)	4 (3.3)	-	3 (3.3)

Note: Figures in parenthesis indicates percentage

Knowledge on other aspects of menstruation

The respondents were queried about their understanding of the menstrual process (as depicted in Table 3), revealing that a significant majority of respondents lacked comprehension about menstruation before the intervention in both regions.

Table 4 outlines the knowledge of adolescent girls regarding the source of menstrual blood before and after the intervention. Predominantly, respondents from both tribal and rural areas displayed a lack of awareness on this aspect, often providing incorrect responses such as the stomach, urinary bladder, or vagina as the origin of menstrual blood. Regardless of their group classification, girls in both areas exhibited confusion regarding the specific organ from which menstrual blood originates. This confusion persisted even during discussions conducted as part of the intervention,

with many girls mistakenly considering the stomach and uterus to be a single organ.

During the intervention program, girls in the experimental groups from rural and tribal regions were educated about the physiology of menstruation through the use of body mapping techniques. This educational approach positively impacted their awareness levels, as evidenced by a significant increase in the percentage of girls correctly identifying the uterus as the source of menstrual blood. Among rural respondents, this percentage increased from 4.2 percent to 85 percent during the post-test, while among experimental tribal group respondents, it rose from zero to 71.7 percent at the post-test assessment. Conversely, such an increase was not observed among respondents in the control group.

Table 3: Perception of respondents regarding understanding of process of menstruation before and after intervention

Categories	Rural				Tribal			
	Exp		Control		Exp		Con	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
No knowledge	68 (56.7)	21 (17.5)	71 (59.1)	68 (56.6)	82 (68.3)	10 (8.3)	53 (44.2)	53 (44.2)
Bad blood	41 (34.2)	28 (23.3)	41 (34.2)	44 (36.7)	18 (15.0)	-	40 (33.3)	43 (35.8)
Monthly periods/ sign of adolescence	11 (9.2)	70 (58.3)	8 (6.7)	8 (6.7)	8 (6.7)	47 (39.2)	-	-
Good blood	-	12 (10.0)	-	-	12 (10.0)	14 (11.7)	20 (16.7)	20 (16.7)

Note: Figures in parenthesis indicates percentage

Table 4: Knowledge of rural and tribal girls on origin / source of menstrual blood before and after intervention

Categories	Rural				Tribal			
	Exp		Control		Exp		Con	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
No knowledge	61 (50.8)	4 (3.3)	46 (38.3)	57 (47.5)	72 (60.0)	1 (0.8)	75 (62.5)	62 (51.7)
Urinary bladder	26 (21.7)	9 (7.5)	36 (30.0)	29 (24.1)	6 (5.0)	1 (0.8)	20 (16.7)	20 (16.7)
Stomach	17 (14.2)	1 (0.8)	17 (14.2)	12 (10.0)	41 (34.2)	-	7 (5.8)	18 (15.0)
Vagina	11 (9.2)	4 (3.3)	11 (9.2)	12 (10.0)	1 (0.8)	32 (26.7)	6 (5.0)	8 (6.2)
Uterus	5 (4.2)	102 (85)	10 (8.3)	10 (8.3)	-	86 (71.7)	12 (10.0)	12 (10.0)

Note: Figures in parenthesis indicates percentage

The impact of intervention on the mean scores of menstrual awareness among both rural and tribal groups is illustrated in Table 5. The intervention notably influenced the knowledge of adolescent girls regarding various aspects of

menstruation. Statistical analysis revealed a significant difference in mean scores among respondents in the experimental groups, both in rural ($p = 0.001$) and tribal areas ($p = 0.000$).

Table 5: Differences in scores of menstrual awareness among rural and tribal respondents

Area	Groups	No.	Mean	SD	t cal	p
Rural region						
Scores on Menstrual awareness	Pre Experimental	60	20.84	3.57	4.797**	0.001
	Post Experimental	60	22.60	6.10		
	Pre Control	60	19.77	6.00	2.382*	0.005
	Post Control	60	20.17	5.49		
Tribal region						
Scores on Menstrual awareness	Pre Experimental	60	18.17	4.70	12.565**	0.000
	Post Experimental	60	26.45	5.67		
	Pre Control	60	20.76	4.59	-0.36 NS	0.719
	Post Control	60	20.67	4.33		

* Significant

** Highly significant

NS Non Significant

Discussion

The occurrence of menarche, marking the onset of menstruation in an adolescent girl's life, is a significant event often met with excitement and curiosity. However, in

many cases, girls are ill-informed and unprepared for this milestone. In the current study, it was found that a majority of rural and tribal respondents lacked awareness of menstruation prior to experiencing it, with some having

never even heard of the term 'menstruation'. Interestingly, adolescent girls in tribal regions exhibited slightly higher levels of awareness compared to their rural counterparts. This difference may be attributed to the socio-cultural context, as tribal families tend to be more open, with menstruation being less taboo as a topic of discussion. Conversely, mothers in rural families may struggle to broach the subject with their maturing daughters.

Numerous studies, including those by Kansal *et al.*, Savanthe *et al.*, and Jogdand and Yerpude, have validated this finding, with awareness of menstruation prior to menarche being less than 30 percent in many cases. Mothers typically serve as the primary informants about menstruation, as supported by research conducted by Chandra and Patel, Preeti *et al.*, and Thakre *et al.* Additionally, friends and sisters play a significant secondary role in informing young girls about menstruation, as indicated by studies by Ejik *et al.* and Kansal *et al.*

The perception of menstruation as taboo, along with the concept of 'bad blood', prevailed among girls in both settings, with rural areas exhibiting a higher prevalence compared to tribal regions. Less than one-tenth of respondents associated menstruation with its correct definition of monthly periods. However, intensive interventions provided to experimental groups in both settings led to a notable difference in the girls' perception of menstruation.

The results of this study align with findings from research conducted by Das and Desai, Venkatachalam *et al.*, and Sharma *et al.*, which indicate that a lack of awareness often leads to misconceptions about menstruation being impure or sinful. Similarly, research by Ejik *et al.* revealed that less than one-fourth of respondents were aware of the uterus as the organ responsible for menstrual bleeding, while studies by Amirtha *et al.* and Preethi *et al.* found poor general knowledge about the organ and source of menstrual blood among respondents.

Health education programs implemented in schools have a significant positive impact on the lives of adolescent girls. Studies by Santhanakrishnan and Athipathy, Pokhrel *et al.*, and Dongre *et al.* have demonstrated that such programs result in improved knowledge and hygiene practices related to menstruation among adolescent girls. Moreover, school-based sexuality education, as highlighted by Vincent and Krishnakumar, and menstrual health awareness campaigns, as emphasized by Rastogi *et al.*, contribute to enhancing awareness and behavior related to sexual and reproductive health outcomes among adolescents.

Conclusion

Menstruation heralds numerous changes in a girl's life, encompassing both physiological and psychological shifts. Adequate prior knowledge and awareness regarding this aspect significantly influence the menstrual experience of an adolescent girl, consequently impacting her reproductive health. Given the discomfort that mothers often experience when discussing such topics with their daughters, school-based education and intervention programs emerge as the optimal solution for imparting knowledge on menstruation, fertility, and other reproductive health matters. The current study underscores the crucial need for school-based intervention programs targeting adolescent girls, aiming to

educate them about menstruation and proper hygiene practices during this period.

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