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Research Article

Reproductive Morbidity and its Treatment Seeking among Adolescent Girls from a Nationwide Survey, India

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A B S T R A C T

Background: India constitutes 242 million adolescents and 116 million are girls. Considering the quantum of this demographic, an adequate literature exists on menstrual health and hygiene for adolescent girls, but studies on reproductive morbidities are very limited. The present study aims to examine the prevalence of reproductive morbidities, its treatment-seeking behavior, and its associated factors among adolescent girls.

Methods: Primary data was collected from 16 major states of India, using cross-sectional survey design. In total, data collected from 6,715 adolescent girls.

Results: Overall, the prevalence of reproductive morbidities was 39% among surveyed adolescent girls. A higher proportion of girls reported severe abdominal pain (24%), followed by itching (16%) and bad odor (12%), all along with discharge. Regression analysis suggests that girls experiencing irregular menstruation, from late adolescent age, having experience of menstrual disorder, girls from urban areas and from higher wealth quintile were more likely to report reproductive morbidities. Only about one-third of girls reported seeking treatment. The odds of treatment seeking suggest that those who previously sought treatment for menstrual disorder and girls from urban areas were more likely to seek treatment. Private clinics/doctors (12%), and medical shops (10%), followed by public health personnel/facilities (only 6%) of the girls were the preferred source of treatment for reproductive morbidities.

Conclusion: The findings of the study highlight the urgent need for an enabling environment for early identification and access to treatment services for reproductive morbidities. A trained and adequate number of peer educators may accelerate health education and generate demand for healthcare services.

Keywords: Reproductive morbidities, Adolescent Girls, Treatment seeking, ARSH, RKSK, India

Introduction

The National Health policy-2017 of India recognizes adolescents' vulnerability, incorporated the required policy directions, and ensures measures for their health and well-being.[1] Adolescence is a period of transition from childhood to responsible adult.[2] The World Health Organization identifies adolescence as the age[3] range of 10 to 19 years and acknowledges it as an important stage in a girl's life that necessitates focused care and support.

The onset of menarche gives way to reproductive morbidities (RM). Viruses, bacteria, chlamydia, mycoplasma and other pathogens leads to these morbidities. Reproductive morbidities may further leads to maternal and perinatal morbidity and mortality. Severe complications arising from these RTIs encompass ectopic pregnancy, pelvic inflammatory disease, preterm labor, miscarriage, stillbirth, congenital infections, infertility, genital cancer, and an increased risk of HIV infection.[4,5] RTIs can lead to significant physical and psychological damage, including infertility, slowed fetal growth, early labor, and heightened susceptibility to HIV/AIDS, which may impose a substantial social and financial strain on families.[6] In addition to health consequences, women experience social consequences in terms of emotional distress related to gynecological morbidity.[7] Most of these illnesses progress to a chronic state and remain with women for the rest of their lives. Hence, the importance of early detection and management becomes much more evident.

India has the largest adolescent globally representing 18% of the entire world's population and 20% of the adolescent demographic. In India, there are 242 million individuals aged between 10-19,[8] Considering this huge adolescent population, there are very few attempts have been made to study the prevalence of reproductive morbidities (RM) and its treatment-seeking behavior. A vast amount of literature exists on menstrual health and hygiene practices and its management but the studies on RM among adolescent girls are very limited. Further, many of these available studies are mostly based on micro-level data from specific pockets of India and do not represent the whole country's scenario on the issue. This paper is a step forward aiming to examine the prevalence of RM, its treatment seeking along with its determinants among adolescent girls from a nationwide survey.

Materials and methods

The study employed data from a nationwide survey, supported by MoHFW, India. This study was conducted by the JSS Institute of Economic Research, Population Research Centers (PRC) Dharwad, and field data operations supported by 15 PRCs and data was collected from 16 major States of India i.e. South India (Karnataka, Kerala, Andhra Pradesh, and Tamil Nadu), Western India (Gujarat and Maharashtra), Northern States (Assam, Himachal Pradesh, Jammu & Kashmir, Punjab, Delhi and Haryana Rajasthan, Bihar) and Central/East States (Bihar, Madhya Pradesh, and Uttar Pradesh).

Sampling design

The present study is designed to collect information from adolescent girls on menstrual health and hygiene along with reproductive morbidities and its treatment. Based on the proportion of women aged 15-24 who use hygienic methods of protection during the menstrual period, all the districts from the selected State were classified into two groups i.e. better and poor-performing districts. Finally, two districts from each set of groups have been randomly selected in each State. So, four districts from each State i.e. a total of 64 districts have been selected for the survey. Within each selected district, 1 Taluk (block i.e. sub-district administrative level) was selected. In each of the selected Taluks, 2 Rural Primary Health Centres and 1 Urban Primary Health Centre were selected. A readily available list of adolescent girls (aged 13-19 years) was collected from the concerned health staff for all three PHCs. From the final updated list, 120 Girls (40 from each PHCs) were selected using a systematic random sampling method for each selected district.

Sample Size

The prevalence of hygienic methods of protection during the menstrual period was found to be 77 percent (NFHS-5), and considered as the value of p, to estimate the required sample size. Considering a significance level of 5 percent, a design effect of 1.25, with a 5 percent margin of error, arrived at a sample size of 480 for each participating State. Hence, a total of 7,680 adolescent girls were selected, of which 6,715 were successfully interviewed with a response rate of 87 percent. About 13 percent of adolescent girls were not able to be interviewed because of either refusal, menarche not attained, or not being available in the household during the period of the survey. Further 71 percent from rural and 29 percent of adolescent girls covered from the urban areas. The data was collected by trained field investigators, and steps were taken to ensure the privacy of adolescent girls, the confidentiality of responses, and the freedom to respond truthfully. The interview schedule underwent local pretesting. Confusing or inconsistent questions from the pre-test were modified and translated into the native language before actual data collection. The interview schedule covered socio-demographic characteristics and explored their knowledge, attitude, and practices related to menstrual health and hygiene and reproductive morbidities. While assessing reproductive morbidities, the question was asked like "Have you had any of the following with vaginal discharge during

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last one year, such as itching or irritation in vaginal area, bad odor, severe abdominal pain and fever?

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Committee of SDM College of Medical Sciences and Hospital Dharwad, before commencing the study. The survey objectives and procedure were discussed with parents and consent of either of the parents/guardians was taken along with assent in case of girls below 18 years and individual consent was taken for the girls of 18 and 19 years. We shared the study purpose, and the voluntary, and anonymous nature of participation, and requested participants' verbal consent by assuring confidentiality. They were assured that even if they wanted to quit the study, they may do so at any point of administering the interview schedule. The interviews were conducted in vernacular language.

Data analysis

Descriptive statistics have been used to summarize the study results. The primary outcome variable of interest is considered as the presence of symptoms related to reproductive morbidities. Information collected as predictor variables such as age, years of schooling, place of residence, religion, caste group (scheduled caste/tribe, other backward classes, and Others, i.e., other than SC/ST/OBCs), and wealth index. The Government of India recognizes Scheduled tribes and scheduled castes as socially disadvantaged groups. Household economic status has been measured using a wealth index comprised of 17 durable goods and assets and household amenities. A multivariate logistic regression was used to examine the correlates of symptoms suggestive of RM and for those who sought treatment. The results are presented in terms of odd ratios. Odds greater than one indicate an increased probability, while those less than one indicate a lower probability. The data were analyzed using STATA 15.1.

Results

Results from Table 1 present the sample characteristics of surveyed adolescent girls. Almost half of the girls were in the age group of 16-19 years (48%). Similarly, about one-fifth were having 12 and above years of schooling (18%). With respect to knowledge received on menstrual health and hygiene soon before or after menarche, results suggest that half of the girls received knowledge from family members (50%) followed by health staff (38%).

Table 1.Sample characteristics of surveyed adolescent girls

Characteristic	Percent	sample
Age (Years)		
13-15	51.8	3,465
16-19	48.2	3,218
Years of schooling		
0-9	47.2	3,153
10-12	34.5	2,305
12 & Above	18.3	1,225
Time since menarche attended		
<2 yrs.	29.8	1,991
2-3 yrs.	41.7	2,786
>=4 yrs.	28.5	1,906
Regularity of menstruation		
Regular	90.0	6,013
Irregular	10.0	670
Absorbent in use		
Sanitary pad	81.3	5,436
Both pad/cloth or nothing	18.7	1,247
Received knowledge on MHH[1] soon before/after menarche		
Not received	10.9	727
Health staff	38.2	2,554
Family members	50.9	3,402
Number of sources received knowledge on MHH[1]		
Not received	31.8	2,124
Single source	30.5	2,036
Two or more sources	37.8	2,523
Religion		
Hindu	75.9	5,074
Muslim	16.6	1,112
Others	7.4	497
Caste		
Scheduled Castes	24.2	1,620
Scheduled Tribes	9.4	629
Other Backward Classes	39.5	2,637
Others	25.6	1,708
Wealth index		
Lower	33.4	2,229
Middle	33.3	2,224
Higher	33.4	2,230
Type of residence		
Rural	71.4	4,771
Urban	28.6	1,912
Region		
Northern	43.2	2,884
Central/East	19.2	1,281
Western	12.8	855
Southern	24.9	1,663
Total	100.0	2,632

[1]Menstrual Health and Hygiene

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The prevalence of reproductive morbidity (RM) and its associated factors have been presented in Table 2. In total, about 39% of adolescent girls reported experiencing at least one symptom of RM in the past 12 months such as itching, bad odor, severe abdominal pain, or had rashes or ulcers on the genitals, all along with discharge. Advancing (age, years of schooling, and duration since menarche attained) was significantly associated with RM. Girls who have experienced menstrual pain (65%) and those with irregular menstruation (50%) were on the higher side to report RM. Further, girls from the Muslim community, Other caste group (48%) scheduled castes (40%), higher wealth quintile (50%), urban areas (43%), and from Northern (53%) and Western region (40%) were on the higher side to report the symptoms of reproductive morbidity. While identifying potential risk factors associated with RM, the results of regression analysis suggest that girls who reported symptoms of RM were more likely to be in the late adolescent age [OR=1.38; p=0.001], experienced menstrual pain (2 or more symptoms) [OR=7.21; p=0.001], having irregular menstruation [OR=1.50; p=0.001], from higher wealth quintile [OR=1.78; p=0.001], urban areas [OR=1.35; p=0.001], and from northern [OR=3.28; p=0.001], western [OR=1.97; p=0.001] and central region [OR=1.63; p=0.001] compared to their respective reference group.

Table 2.Prevalence of reproductive morbidity (RM) and associated factors among adolescent girls in the last 12 months by background characteristics

Characteristic	RM	Chi² test	Odds ratio	Conf. Interval
Age (Years)				
13-15®	35.8	χ^2=37.7600 P= 0.000		
16-19	43.2		1.376***	[1.168,1.622]
Years of schooling				
0-9®	35.2	χ^2=43.5118 P= 0.000		
10-12	43.5		1.077	[0.937,1.238]
12 & Above	42.3		0.875	[0.721,1.060]
Time since menarche attended				
<2 yrs.®	35.2	χ^2=23.3711 P= 0.000		
2-3 yrs.	40.3		1.045	[0.903,1.210]
>=4 yrs.	42.4		0.992	[0.814,1.210]
Experienced menstrual pain				
No menstrual pain/discomfort	18.5	χ^2=861.9806 P= 0.000		
Single symptom	45.2		3.682***	[3.206,4.229]
Two symptoms	56.0		5.082***	[4.320,5.979]
More than 2 symptoms	64.8		7.211***	[6.004,8.660]
Regularity of menstruation				
Regular	38.2	χ^2=37.1618 P= 0.000		
Irregular®	50.3		1.496***	[1.250,1.791]
Absorbent in use				
Sanitary pad only	41.0	χ^2=31.3386 P= 0.000		
Both pad and or cloth	32.4		0.946	[0.813,1.101]
Number of Sources received knowledge^				
Not received®	36.8	χ^2=9.0573 P= 0.011		
Single source	40.9		1.065	[0.919,1.234]
Two or more sources	40.3		0.986	[0.851,1.143]
Religion				
Hindu®	37.3	χ^2=37.6154 P= 0.000		
Muslim	46.3		0.898	[0.767,1.052]
Others	44.9		0.765*	[0.612,0.957]

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Caste				
Scheduled Castes	40.3	χ^2=128.7253 P= 0.000	1.122	[0.951,1.324]
Scheduled Tribes	27.3		0.885	[0.703,1.114]
Other Backward Classes	35.3		0.957	[0.826,1.108]
Others®	48.1			
Wealth index				
Lower®	29.4	χ^2=209.7961 P= 0.000		
Middle	38.3		1.371***	[1.188,1.581]
Higher	50.5		1.782***	[1.533,2.071]
Type of residence				
Rural	38.0	χ^2=12.9606 P= 0.000		
Urban®	42.8		1.355***	[1.194,1.537]
Region				
Northern	53.3	χ^2=480.2124 P= 0.000	3.276***	[2.795,3.839]
Central/East	29.3		1.630***	[1.339,1.984]
Western	39.6		1.974***	[1.620,2.404]
Southern®	22.9			
Total	39.4			

Note: * p<0.05, ** p<0.01, *** p<0.001; 95% confidence intervals in brackets

Received knowledge on Menstrual health and hygiene soon before/after menarche.

^Ever received knowledge on menstrual health and hygiene from health staff $Scheduled tribes and scheduled castes are recognized by the government of India as being socially disadvantaged.

The symptoms of RM in the last 12 months have been presented in Figure 1. The figure depicts that a higher prevalence of severe abdominal pain with the discharge (not during menstruation) was found to be 24 percent, followed by itching with discharge (16%), and bad odor along with discharge (12%).

An attempt has been made to analyze the treatment-seeking behavior for reproductive morbidity (RM) among adolescent girls and presented in Table 3. Among those who had experienced symptoms of RMs, approx. one third of them reported to sought treatment for RM in the last 12 months (31%). A higher proportion of girls from late adolescent age group (34%), higher level of schooling (12 or above-36%) and a higher duration since menarche attained i.e. 4 or more years (36%) found to sought treatment for RM. Further, girls from Other caste groups (36%) scheduled tribes (34%), lower wealth quintile (37%), urban areas (35%), and girls from Northern and southern regions of India (33% each) were on higher side to sought treatment for RM. While identifying factors associated with treatment seeking for RM, the results of regression analysis suggest that girls who have sought treatment for menstrual pain [OR=6.30; p=0.001], from urban areas [OR=1.39; p=0.001] were more likely to seek treatment compared to their counterparts i.e. those who didn't seek treatment for menstrual pain and girls from rural areas respectively.

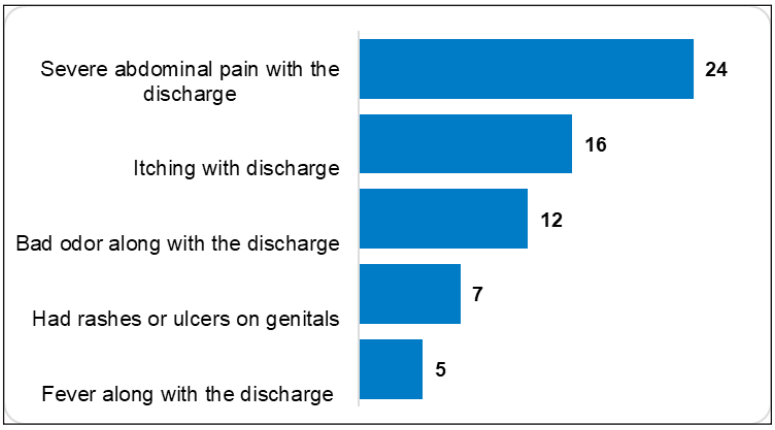

Figure 1.Percent of adolescent girls reported symptoms of reproductive morbidity

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Table 3.Percent of adolescent girls sought treatment for reproductive morbidity and its associated factors

Characteristic	Sought treatment	Chi² test	Odds ratio	Conf. Interval
Age (Years)				
13-15®	28.7	χ^2=7.6421 P= 0.006	-	-
16-19	33.7		1.222	[0.919,1.624]
Years of schooling				
0-9®	29.9	χ^2=5.9540 P= 0.051	-	-
10-12	30.6		1.037	[0.809,1.328]
12 & Above	35.7		1.093	[0.788,1.516]
Time since menarche attended				
<2 yrs.®	27.1	χ^2=14.6440 P= 0.001	-	-
2-3 yrs.	30.5		1.024	[0.782,1.341]
>=4 yrs.	36.1		1.011	[0.711,1.437]
Treatment sought for menstrual pain				
No®	25.0	χ^2=224.541 P= 0.000	-	-
Yes	66.4		6.296***	[4.848,8.178]
Number of sources of knowledge received on MHH^				
Not received®	31.8	χ^2=1.1625 P= 0.559	-	-
Single source	29.9		0.898	[0.691,1.168]
Two or more sources	32.1		0.855	[0.659,1.109]
Religion				
Hindu®	32.2	χ^2=8.0826 P= 0.018	-	-
Muslim	31.8		0.861	[0.662,1.121]
Others	22.9		0.757	[0.504,1.138]
Caste$				
Scheduled Castes	30.0	χ^2=19.5501 P= 0.001	0.775	[0.584,1.029]
Scheduled Tribes	34.3		0.871	[0.551,1.374]
Other Backward Classes	28.2		0.882	[0.685,1.137]
Others®	36.1			
Wealth index				
Lower®	37.1	χ^2=13.8350 P= 0.001	-	-
Middle	30.0		1.270	[0.964,1.672]
Higher	29.0		1.100	[0.869,1.392]
Type of residence				
Rural	29.8	χ^2=6.4243 P= 0.011	-	-
Urban®	34.7		1.386**	[1.112,1.727]
Region				
Northern	32.8	χ^2=28.6158 P= 0.000	1.444*	[1.042,1.999]
Central/East	34.9		1.478	[0.994,2.196]
Western	18.9		0.581*	[0.381,0.885]
Southern®	32.9		-	-
Total	31.3		-	-

Note: * p<0.05, ** p<0.01, *** p<0.001; 95% confidence intervals in brackets

Received knowledge on Menstrual health and hygiene soon before/after menarche.

^Ever received knowledge on menstrual health and hygiene from health staff

$Scheduled tribes and scheduled castes are recognized by the government of India as being socially disadvantaged.

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The source of treatment sought for reproductive morbidity among adolescent girls is presented in Figure 2. Girls primarily sought treatment from private clinics (12%) and only about 6 percent of girls sought from either ANM/ASHA or PHC/CHC/SDH/DH. Accredited social health activists (ASHA) and ANM (Auxiliary nurse midwife) are the frontline female workers from the beneficiary community who are trained to provide primary health care and nutrition services. Surprisingly, about 70 percent of girls didn't seek any treatment for reproductive morbidity.

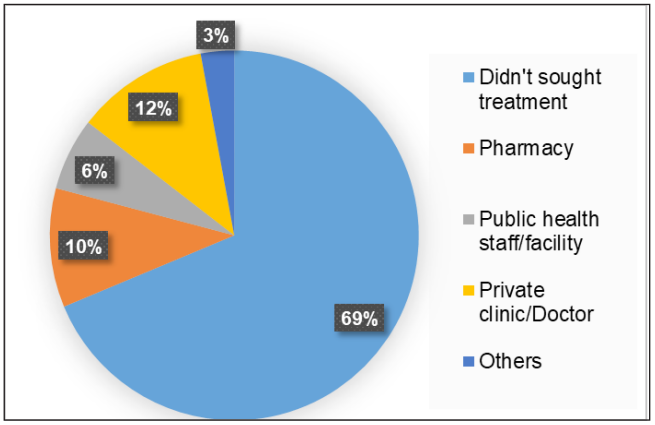

Figure 2.Source of treatment sought for reproductive morbidity among adolescent girls

Discussion

This study aims to present the prevalence of reproductive morbidity (RM), subsequent treatment, and its associated factors among adolescent girls from 16 major States of India. Overall, the prevalence of RM was 39% among surveyed adolescent girls. Among them, a higher proportion of girls reported severe abdominal pain (24%), followed by itching (16%) and bad odor(12%), all along with discharge.

Results of logistic regression analysis suggest that girls from late adolescent age, those who experienced a higher number of symptoms of menstrual disorder, girls with irregular menstruation, girls from the higher wealth quintile, and girls from urban areas were more likely to report symptoms of RM. Studies from India regarding reproductive morbidity among adolescent girls reported to be in the range of 33% to 68%.[9-13] Regarding treatment seeking, a little less than one-third of girls reported to seek treatment (31%). Similar findings have been reported from the studies conducted in different pockets of India suggesting the treatment seeking for RTI varies from 26 to 40 percent.[14-17] Further, results of logistic regression analysis suggest that those who previously sought treatment for menstrual pain and those from urban areas were more likely to seek treatment. The findings of the study are in tune with the previous studies reporting lower treatment-seeking for gynecological morbidities among rural girls majorly because of the stigma attached to it or maybe due to healthcare facilities being too far from the home or they do not feel that treatment is needed.[18,19]

Regarding, the preferred source of treatment for RTI, it is noted that most of the girls prefer to seek treatment from a private clinic/doctor (12%), followed by medical shops (10%) as the major treatment option, whereas 6 percent of the girls preferred to get the treatment either from ANM/ASHA/RMP or PHC/CHC/SDH/DH. Similarly, a study found that adolescent girls primarily use pharmacological treatments and traditionally percolated remedies, with a marginal proportion of girls seeking medical examination.[20]

Surprisingly, about 70 percent of girls didn't seek any treatment for RTI. The probable reason could be ignorance and self-limiting about the gynecological problem.[21,22] Other studies, exploring treatment seeking among adolescent girls for RTI symptoms suggest that a marginal proportion of girls ranging from one-third to two-fifths seek treatment from formal medical providers.[23-26] Further, the age of girls, their level of education, the higher wealth quintile they belong and particularly those who received knowledge of RTI/STI raised the reporting of RTIs and its treatment seeking.[24] Embarrassment, taboos related to menstruation, and social stigma were found to be key barriers to treatment seeking.[26]

Existing literature suggests that adolescent do not find it appropriate to discuss or care-seeking for menstrual problems or STIs, rather they prefer discussing these issues with their mothers. The results of this research indicate that adolescent girls view front-line workers, specifically community health workers, as suitable for acquiring health products rather than consulting them for guidance on reproductive and sexual health issues.[27,28] Moreover, frontline workers are grossly engaged in maternal and child health services and other national health programs. Hence, there is a need to find ways to strengthen coverage of adolescent girls (unmarried/married, school going/ dropout) for their reproductive and sexual health concerns along with strengthening Adolescent Friendly Health Clinics (AFHCs), which was established under the Rashtriya Kishor Swasthya Karyakram (RKSK). According to a study, about 71% of children and adolescents worldwide are internet users, which has altered how they learn, understand, interact, and respond with family and peers.[29] There is evidence suggesting the impact of online intervention enabling adolescents to seek sexual and reproductive health services using chatbots, online counseling, infotainment videos, etc.[29,30] Considering the huge adolescent population in India, it is inevitable to address health concerns for their overall development. To achieve this goal, the Government of India has launched the India Adolescent Health Strategy (IAHS), which is founded on the values of leadership and involvement, human rights, fairness and inclusion, as well

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as strategic collaborations.[31] This strategy foresees that all adolescents in India should realize their full potential by making informed and responsible decisions related to their health and well-being through improved access to support and services. It is worth mentioning to highlight certain study limitations. The cross-sectional design of the study precludes causality. Similarly, this study collected information on the last treatment sought and not the sequence of the treatment sought i.e. self-treatment or home remedies from unqualified practitioners to qualified ones.[32] The evidence need to be collected the pathways of treatment seeking. Further, the severity of symptoms has not been collected which affects the treatment seeking hence the findings should be interpreted with caution. Additionally, evidence need to be strengthen considering different geographically marginalized regions and its effect on the treatment seeking for reproductive morbidities among adolescent girls.

Conclusions

Research on menstrual health care among adolescent girls in India reveals a lack of awareness and knowledge about hygienic practices during menstruation. This is often due to cultural taboos and misconceptions surrounding menstruation, leading to poor menstrual hygiene practices and increased vulnerability to reproductive morbidities. Educational interventions, social marketing of low-cost sanitary pads, and better communication between adolescent girls and their teachers and mothers are recommended to improve menstrual health care among this demographic. There is a need for increased knowledge and awareness, as well as strategies to address power imbalances and encourage healthcare providers to reach out to this vulnerable population.[23,24,26]

Conflict of Interest: None

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