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IMPACT OF MEDIA EXPOSURE ON MENSTRUAL HYGIENE KNOWLEDGE, ATTITUDES, AND PRACTICES AMONG ADOLESCENT GIRLS: A CROSS-SECTIONAL STUDY

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Keywords	Abstract
<i>Menstrual Hygiene Management, Media Exposure, Adolescent Girls, India</i>	Background: Menstrual hygiene management (MHM) is an essential component of adolescent reproductive health, yet inadequate knowledge and persistent socio-cultural stigma continue to hinder healthy menstrual practices among adolescent girls. With the rapid expansion of traditional and digital communication platforms, the media has emerged as a potential source of menstrual health information. However, evidence regarding its influence on menstrual hygiene knowledge, attitudes, and practices among Indian adolescents remains limited. This study assessed the impact of media exposure on menstrual hygiene knowledge, attitudes, and practices among school-going adolescent girls in West Bengal, India. Methods: A school-based cross-sectional study was conducted among 2,119 girls aged 12–18 years from 13 districts of West Bengal. Data were collected through face-to-face interviews using a pre-tested structured study schedule. Information on socio-demographic characteristics, media exposure, menstrual hygiene knowledge, attitudes, and practices was



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	obtained. Results: Nearly all participants (99.5%) reported receiving menstrual health information through media, while 70.5% used the internet for health-related information, and 66.7% regularly watched television. Media exposure showed strong positive correlations with menstrual hygiene knowledge ($r=0.76$), attitudes ($r=0.75$), and hygiene practices ($r=0.72$) (all $p<0.05$). Multiple linear regression demonstrated that media exposure independently predicted knowledge ($\beta=0.24$, $p<0.05$), attitudes ($\beta=0.46$, $p<0.05$), and hygiene practices ($\beta=0.07$, $p<0.05$) after adjusting for socio-demographic factors. Mediation analysis indicated that the effect of media exposure on hygiene practices was largely mediated through improvements in menstrual knowledge and attitudes. Conclusions: Media exposure is significantly associated with improved menstrual hygiene knowledge, positive attitudes, and healthier menstrual hygiene practices among adolescent girls. Integrating evidence-based media communication with school-based menstrual health education and digital awareness initiatives may enhance menstrual health literacy and promote healthy menstrual hygiene management.
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Introduction

Menstruation is a natural physiological process experienced by nearly half of the global population during their reproductive years. Despite being a normal biological event, menstruation continues to be surrounded by silence, stigma, misconceptions, and restrictive socio-cultural beliefs in many parts of the world. These challenges often prevent adolescent girls from acquiring accurate information before menarche and from adopting appropriate menstrual hygiene practices thereafter. The concept of menstrual hygiene management (MHM) extends beyond the mere use of sanitary products; it encompasses access to correct information, hygienic materials, privacy, adequate sanitation facilities, safe disposal mechanisms, and a supportive social environment that enables girls to manage menstruation with dignity and confidence (UNICEF & WHO, 2021).

Adolescence represents a critical developmental period during which girls undergo profound physical, emotional, and psychological changes. Menarche is one of the most significant milestones during this stage. Yet, many girls experience it with fear, confusion, embarrassment, or anxiety due to inadequate preparation and limited access to reliable information (Sommer et al., 2015). Poor menstrual knowledge may lead to unhealthy hygiene practices, school absenteeism, social withdrawal, reproductive tract infections, and reduced participation in educational and social activities (Hennegan et al., 2019). Consequently, improving menstrual health has emerged as an important public health priority and has been recognized as an essential component of achieving gender equality, quality education, and universal health coverage under the Sustainable Development Goals (United Nations, 2015).



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Although awareness regarding menstrual health has improved substantially over the past decade, considerable disparities persist between and within countries. Studies conducted across low and middle-income countries consistently demonstrate that adolescent girls often possess incomplete or inaccurate knowledge regarding the physiological basis of menstruation, menstrual cycle characteristics, hygienic product use, and proper disposal practices (Chandra-Mouli & Patel, 2017; Hennegan et al., 2019). These deficiencies are further compounded by cultural taboos, gender norms, inadequate school-based reproductive health education, and unequal access to health information.

India presents a particularly important context for menstrual health research because of its large adolescent population and substantial socio-economic, educational, and geographical diversity. Although several governmental initiatives, including the Menstrual Hygiene Scheme under the National Health Mission and the *Rashtriya Kishor Swasthya Karyakram* (RKSK), have sought to improve menstrual awareness and access to sanitary products, evidence suggests that knowledge and hygienic practices remain unevenly distributed, especially across rural and urban settings (Ministry of Health and Family Welfare, Government of India, 2014). National surveys continue to indicate variations in the use of hygienic menstrual products according to education, household wealth, and place of residence (NFHS-5, 2021). In many communities, menstruation is still considered a private or even taboo subject, limiting opportunities for open discussion within families and educational institutions.

In recent years, the media has emerged as an increasingly influential source of health information among adolescents. Traditional mass media, including television, newspapers, magazines, and radio, have long been used to disseminate public health messages. More recently, the rapid expansion of internet connectivity, smartphones, and social media platforms has transformed the way young people seek and consume health-related information. Digital media offers immediate access to educational resources, expert opinions, awareness campaigns, peer discussions, and product information, potentially improving menstrual knowledge and encouraging healthy practices (Rideout & Robb, 2018; World Health Organization, 2023). Unlike conventional interpersonal communication, media can reach large populations simultaneously and has the capacity to normalize discussions surrounding menstruation by reducing stigma and increasing visibility.

Despite growing recognition of media as a determinant of adolescent health behaviour, existing research has several limitations. Most previous studies have primarily focused on describing menstrual knowledge and hygiene practices without examining media exposure as an independent explanatory factor. Where media has been investigated, it is often treated simply as one of several information sources rather than as a multidimensional construct encompassing formal education, digital engagement, traditional media consumption, health campaigns, and technology use. Furthermore, relatively few studies have simultaneously explored the relationship between media exposure and all three components of menstrual health, knowledge, attitudes, and hygiene practices,



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while accounting for important socio-demographic factors such as habitat, maternal education, family income, and age. Evidence from eastern India, particularly West Bengal, also remains comparatively limited despite the state's diverse socio-cultural and economic landscape.

Against this background, the present study examines the impact of media exposure on menstrual hygiene knowledge, attitudes, and practices among adolescent girls in West Bengal. Specifically, the study investigates patterns of media exposure, evaluates differences across habitats, and analyses whether media exposure independently predicts menstrual knowledge, attitudes, and hygiene practices after adjusting for relevant socio-demographic characteristics. By identifying the pathways through which media contribute to menstrual health behaviour, this study seeks to generate evidence that can inform school health programmes, public health communication strategies, digital health initiatives, and policy interventions aimed at improving menstrual health literacy and promoting equitable menstrual hygiene management among adolescent girls.

Materials and Methods

Study Design and Participants

A school-based cross-sectional study was conducted among girls aged 12–18 years in 13 districts of West Bengal, India. The study included school-going girls who had attained menarche and were willing to participate. Girls who had not experienced menarche or declined participation were excluded.

Sample Size

The minimum sample size was estimated using a standard formula. The minimum required sample size was 384 participants. Since the study was conducted across five administrative divisions of West Bengal, the minimum sample size was proportionately increased to 1,920 participants to ensure adequate regional representation. Finally, data were collected from 2,119 school-going girls, providing a larger and more representative sample for statistical analysis.

Sampling and Data Collection

A multistage sampling technique was adopted. Schools from urban, suburban, and rural areas of the selected districts were included. Eligible participants were recruited after obtaining permission from the school authorities. Data were collected through face-to-face interviews using a pre-tested structured study schedule, which included information on socio-demographic characteristics, menstrual knowledge, attitudes, hygiene practices, and media exposure related to menstrual health. Interviews were conducted in a private setting within the school premises.

Study Variables

The primary independent variable was media exposure, while the outcome variables were menstrual hygiene knowledge, attitudes towards menstruation, and hygiene practices. Age, habitat, family income, and mother's education were considered as covariates.



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Statistical Analysis

Data were entered into Microsoft Excel and analysed using IBM SPSS Statistics (Version 26). Descriptive statistics were presented as frequencies, percentages, means, and standard deviations. Chi-square tests were used to assess associations between categorical variables, while one-way ANOVA was applied to compare mean scores across habitats. Pearson's correlation analysis and multiple linear regression were performed to examine relationships between media exposure and menstrual hygiene knowledge, attitudes, and practices. A p -value <0.05 was considered statistically significant.

Ethical Considerations

The study was approved by the Institutional Ethics Committee. Permission was obtained from the concerned school authorities and participants before data collection.

Results

A total of 2,119 adolescent girls from thirteen districts of West Bengal participated in the study. The findings primarily focused on the relationship between media exposure and menstrual hygiene knowledge, attitudes, and practices. Descriptive analyses of media exposure were followed by inferential analyses examining its association with menstrual health outcomes.

Table 1: Media Exposure to Menstrual Health Information among Adolescent Girls (n=2,119)

Variables	Category	n	%
Formal education on menstruation	Yes	713	33.65
	No	1406	66.35
Workshops/awareness sessions attended	Yes	1333	62.91
	No	786	37.09
Learned through the media	Yes	2109	99.53
	No	10	0.47
Regular newspaper/magazine reading	Yes	1275	60.17
	Rare/Never	844	39.83
Frequent television viewing	Yes	1413	66.68
	No	706	33.32
Internet use for health information	Yes	1494	70.51



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	No	625	29.49
Awareness of health applications	Yes	77	3.63
	No	2042	96.37
Use of menstrual tracking applications	Yes	36	1.70
	No	2083	98.30

Table 1 revealed that the majority of respondents reported exposure to menstrual health information through one or more forms of media. Nearly all participants (99.5%) stated that they had learned about menstruation through media platforms, while approximately two-thirds watched television regularly (66.7%) and used the internet to obtain health-related information (70.5%). More than sixty percent had attended menstrual health workshops or awareness sessions (62.9%). However, only one-third of the respondents had received formal menstrual education in schools (33.7%). Digital engagement through health applications remained limited, with only 3.6% reporting awareness of menstrual health applications and fewer than 2% using menstrual tracking applications.

Table 2: Correlation between Media Exposure, Knowledge, Attitude and Hygiene Practice Scores

Variable	Knowledge	Attitude	Practice
Media Exposure	0.76*	0.75*	0.72*

*p<0.05

Correlation analysis demonstrated strong positive associations between media exposure and all three menstrual health domains in table 2. Media exposure showed the strongest relationship with menstrual hygiene knowledge (r=0.76), followed by attitudes towards menstruation (r=0.75) and hygiene practices (r=0.72). Girls with greater exposure to menstrual health information through media generally exhibited higher levels of knowledge, more favourable attitudes, and better hygiene practices.

Table 3: Multiple Linear Regression Analysis Showing the Effect of Media Exposure on Knowledge, Attitudes and Hygiene Practices

Dependent Variable	β for Media Exposure	t
Knowledge Score	0.24	18.36*
Attitude Score	0.46	24.50*



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Hygiene Practice Score	0.07	4.03*
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*p<0.05

[Adjusted for age, habitat, family income and mother's education]

In table 3, multiple linear regression analysis revealed that media exposure remained a significant independent predictor of all three outcome variables after adjustment for socio-demographic characteristics. The strongest influence was observed on menstrual attitudes ($\beta=0.46$, $p<0.05$), followed by knowledge ($\beta=0.24$, $p<0.05$). Although the direct effect on hygiene practices was comparatively smaller ($\beta=0.07$, $p<0.05$), the association remained statistically significant, indicating that increased exposure to menstrual health information contributes positively to hygienic behaviour.

Table 4: Indirect Effects of Media Exposure on Practice (Mediation Pathways)

Indirect Path	Indirect Effect	95% CI
Media Exposure → Knowledge → Practice	0.24*	0.18 – 0.30
Media Exposure → Attitude → Practice	0.26*	0.20 – 0.32
Media Exposure → Knowledge → Attitude → Practice	0.19*	0.15 – 0.24

*p<0.05

In table 4, mediation analysis demonstrated that the effect of media exposure on hygiene practices was largely indirect, operating through improvements in menstrual knowledge and attitudes. The indirect effect through knowledge was 0.24 (95% CI: 0.18–0.30), while the pathway through attitudes was 0.26 (95% CI: 0.20–0.32). A sequential pathway involving both knowledge and attitudes also remained significant (indirect effect=0.19, 95% CI: 0.15–0.24), indicating that media contributes to improved hygiene practices primarily by enhancing awareness and fostering positive perceptions toward menstruation.

Discussion

The present study examined the influence of media exposure on menstrual hygiene knowledge, attitudes, and practices among school-going adolescent girls in West Bengal. The findings indicate that media exposure is an important determinant of menstrual health literacy and hygienic behaviour. Girls with greater exposure to menstrual health information through traditional and digital media demonstrated significantly higher knowledge scores, more positive attitudes towards menstruation, and better menstrual hygiene practices. Even after adjusting for age, habitat, family income, and mother's education, media exposure remained an independent predictor of all three outcome variables. These findings highlight the growing importance of health communication in improving menstrual health among adolescents.



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One of the notable findings of this study was the widespread exposure of participants to menstrual health information through the media. Nearly all respondents reported learning about menstruation through one or more media sources, while a substantial proportion regularly accessed health information through television and the internet. This reflects the rapid expansion of digital communication and increasing accessibility of health-related information among adolescents in India. Similar observations have been reported by the World Health Organization, which recognizes digital media as an increasingly important platform for delivering adolescent health information and promoting healthy behaviours (WHO, 2023). Likewise, the United Nations Children's Fund has emphasised that access to accurate menstrual health information through multiple communication channels is essential for improving menstrual health literacy and reducing stigma (UNICEF & WHO, 2021).

The study found a strong positive relationship between media exposure and menstrual hygiene knowledge. Adolescents who were more frequently exposed to menstrual health information demonstrated better understanding of menstruation, its physiological basis, and appropriate hygiene management. This finding is consistent with previous studies showing that mass media and digital platforms can substantially improve reproductive health awareness among adolescents by providing information that may not be available through family or school discussions (Chandra-Mouli & Patel, 2017; Hennegan et al., 2019). Health communication theories also support this relationship. According to Social Cognitive Theory, repeated exposure to educational messages enables individuals to acquire knowledge through observation and reinforcement, thereby facilitating positive behavioural change (Bandura, 2004).

Media exposure was also positively associated with attitudes towards menstruation. Girls with higher exposure exhibited more favourable perceptions and reduced negative attitudes regarding menstruation. Menstrual stigma often develops through cultural silence, misinformation, and restrictive social norms, particularly during early adolescence. Exposure to scientifically accurate educational content through television, internet resources, awareness campaigns, and school-based media programmes may help normalize menstruation, challenge misconceptions, and improve adolescents' confidence in discussing menstrual health. Previous qualitative and quantitative studies have similarly reported that educational campaigns and social media initiatives contribute to reducing menstrual stigma and improving emotional well-being among adolescent girls (Guglielmi et al., 2022; Hennegan et al., 2021).

Although the direct association between media exposure and hygiene practices was comparatively smaller than its association with knowledge and attitudes, it remained statistically significant after adjustment for socio-demographic factors. More importantly, mediation analysis demonstrated that media exposure influenced menstrual hygiene practices largely through improvements in knowledge and attitudes. This finding suggests that media does not simply change behaviour directly; rather, it



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promotes behavioural change by increasing awareness and fostering positive perceptions towards menstruation. Similar pathways have been described in behavioural health research, where improved health literacy serves as an intermediary between health communication and behavioural outcomes (Nutbeam, 2008). The findings therefore reinforce the importance of educational media interventions that focus on knowledge building alongside behaviour change communication.

The present study has important public health implications. Schools remain an important setting for menstrual health education; however, the findings indicate that formal education alone may not be sufficient to meet adolescents' informational needs. Integrating school-based reproductive health education with evidence-based mass media campaigns, digital health platforms, and community awareness programmes could substantially improve menstrual health literacy among adolescent girls. Given the increasing use of smartphones and internet-based communication among young people, carefully designed digital interventions may represent a cost-effective strategy for reaching large populations while simultaneously addressing menstrual myths, stigma, and misinformation.

This study possesses several strengths. It included a large sample of adolescent girls drawn from several districts of West Bengal, thereby improving the representativeness of the findings across diverse socio-demographic settings. The study also examined multiple dimensions of media exposure and simultaneously evaluated knowledge, attitudes, and hygiene practices using multivariable regression and mediation analyses, providing a more comprehensive understanding of the pathways through which media influences menstrual health behaviour. Nevertheless, certain limitations should be acknowledged. The cross-sectional design limits the ability to establish causal relationships between media exposure and menstrual health outcomes. Information was collected through self-reported interviews, which may be influenced by recall bias. In addition, the study was limited to school-going adolescents and therefore may not fully represent out-of-school girls, who often experience greater barriers to menstrual health information and services. Future longitudinal and intervention-based studies are needed to establish causal pathways and evaluate the effectiveness of specific media-based educational programmes.

Overall, the findings demonstrate that media exposure plays a significant role in improving menstrual hygiene knowledge, fostering positive attitudes, and promoting healthy menstrual hygiene practices among adolescent girls. Strengthening evidence-based health communication through schools, traditional media, and digital platforms may therefore contribute substantially to improving menstrual health literacy and achieving better reproductive health outcomes among adolescents in India.

Conclusion

The present study demonstrates that media exposure plays a significant role in improving menstrual hygiene knowledge, shaping positive attitudes, and promoting healthy menstrual hygiene practices



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among adolescent girls in West Bengal. Greater exposure to menstrual health information through traditional and digital media was associated with better menstrual health outcomes, even after adjusting for socio-demographic factors. The findings further suggest that the influence of media on hygiene practices is largely mediated through enhanced knowledge and more positive attitudes towards menstruation.

These findings highlight the importance of integrating evidence-based media communication with school-based menstrual health education to improve menstrual health literacy among adolescents. Strengthening digital health initiatives, awareness campaigns, and accessible reproductive health information can contribute to reducing menstrual stigma and promoting safe menstrual hygiene management, particularly among underserved populations. Future longitudinal and intervention-based studies are recommended to establish causal relationships and evaluate the long-term effectiveness of media-based menstrual health programmes.

AUTHOR(S) CONTRIBUTION

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

PLAGIARISM POLICY

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