

# Factors Explaining Regional Variations in Menstrual Hygiene Practices among Young Women in India: Evidence from NFHS-4

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## **Abstract:**

**Introduction:** Menstrual Hygiene Management (MHM) is a serious issue for young girls in India.

**Objective:** The study examines the regional disparities in menstrual hygiene practices among young women in India.

**Methodology:** Data collected from the fourth round of National Family Health Survey (NFHS-4), conducted from 2015 to 2016 has been used for this study.

**Results:** The study found that, overall 57.6% of young women in India are practicing hygienic methods during their menstrual period. About half of the rural women (48.2%) used hygienic methods compared with 77.5% of women in urban areas. Women belonging to the richest category were six times more likely to use hygienic methods compared to women belonging to the poorest category (OR= 6.4). The study also found that women with higher education, have a flush toilet at home, and access to media every day were more likely to use menstrual hygiene methods. The range of using hygienic methods varies from 79.8% in the Southern region to 43.8% in the Eastern region.

**Conclusion:** Young women should be educated about the importance of maintaining hygiene during menstruation to prevent the risk of reproductive tract infection. The government has to make MHM a priority and commit a budget for free distribution of sanitary pads.

*Keywords: Hygiene practice, Regional disparity, Menstrual Hygiene, Young women, India*

## **INTRODUCTION**

There are many socio-cultural practices within the country that are not scientifically supported and accepted. The regional, socio-cultural, sometimes, religious often-superstitious practices pose a significant conundrum to the overall wellbeing of the society. Menstruation is generally considered as an unclean, dirty or impure phenomena in the Indian society, which is commonly clouded by various myths and misconceptions (Anand et al., 2015; Dhingra et al., 2009; Kumar and Srivastava, 2011; Paria et al., 2014 ). Women undergoing the monthly cycle are subjected to restrictions in participating household and non-secular activities like cooking, touching pickles, entering a kitchen, having a meal together, wearing certain clothes, touching men or having sexual intercourse (Dasgupta and Sarkar, 2008; Juyal et al., 2013). They are also not permitted to enter a temple (Juyal et al., 2013; Kumar and Srivastava, 2011; Thakur et al., 2014).

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Menstrual hygiene is defined as maintaining cleanliness of the body during menstrual flow. It requires basic facilities like suitable clothes, soakage material, water, soap, and toilet facilities with privacy. Poor personal hygiene and defective menstrual management practices may lead to problems, such as itching or rashes in the perineal region, bad odor (Kumar et al., 2017); and it give rise to repeated reproductive tract infections, which are otherwise preventable (Barman et al., 2017). Unaddressed menstrual hygiene is said to hamper the achievement of a number of sustainable development goals (SDGs) because it is closely related to gender equality and feminine empowerment through its direct effect on women's reproductive health, education, and work participation. A large study by Neilson (2010) concluded that only 12% of India's 355 million menstruating women use sanitary pads. Goyal (2016) reported that over 88% of women depend on different alternatives like unsanitized cloth or rugs, ashes, and husk sand. The percentage of the usage of cloth and sanitary napkins varies depending on many factors like awareness, finance, availability, and social norms (Farid, 2016). According to Census of India (2011), women in the age group of 15 to 24 years constitute about 19% of the overall female population of India. Hence, the monthly menstrual need of such an enormous population has to be received with proper attention. For the promotion of menstrual hygiene, in June 2011 the Government of India launched a brand new scheme to make sanitary napkins available in rural areas at a subsidized cost. While all initiatives transpire, by the Government of India, a major section of adolescent girls still do not have a prior awareness about menstrual cycle and menstrual hygiene practices, which results in poor menstrual hygiene. Some micro level studies that focused on menstrual practices among school-going adolescent girls have reported the utilization of sanitary pads between 20% to 35% in rural India (Kansal et al., 2016; Patil, 2014; Sarkar et al., 2017).

As mentioned earlier, India is a country with several disparities, like wealth related disparities, gender related disparities attributable, to which there exists a significant variation among girls between various regions of the country. Numerous studies have been conducted across the country to study the prevalence of unsafe menstrual hygiene practices and their causes and implications. One such study conducted by Kumar et al. (2013) in Northern India found that noticing the signs of menstruation before menarche was reported to be 60%, while awareness was significantly related to age. Studies conducted in other Indian states, including Maharashtra and Tamil Nadu, have shown that, during menstruation, girls are asked to remain far away from religious spaces, kept in isolation, not allowed to play outside, or even go to school (Bharatwaj et al., 2014; Deo & Ghattargi, 2005). Another study conducted by Empowered Action Group (EAG) found that about 44% of the women used hygienic methods during their menstrual period, whereas the remaining 56% were used clothes or unhygienic method of menstrual protection (Kathuria & Raj, 2018). In this view, this paper makes an attempt to provide the evidence on the regional variations in the prevalence of menstrual hygiene practices among young women and its socio-demographic correlates in India from a nationally representative survey.

## **METHODOLOGY**

The study used secondary data from the fourth round of the National Family Health Survey (NFHS-4) in India conducted from 2015 to 16. The survey presents the data on population, health, and nutrition on a national, state, and district level. A total of 601,509 households and interviews from 699,686 women ages 15 to 49 were taken from all states and union territories of India. Stratified 2 stage sampling was used as the sampling design covering 28,586 clusters for NFHS-4 study. In the first stage, primary sampling units were selected, and in the second stage, the households for the study were chosen. Primary sampling units with at least 300 households were divided into segments of approximately 100 to 150 households. Two of the segments were selected using systematic sampling with probability proportional to size. From each selected rural and urban cluster, 22 households were selected using systematic sampling (IIPS, 2017). As the young women in the age group of 15 to 24 years old were considered in the analysis, the sample consists of 244,500 young women who have ever menstruated. For regional analysis, we followed the NFHS-4 classification where Indian states and Union territories grouped into six regions: North-East, North, Central, East, West, South. The details of each region's classification are given in Table 1.

**Table 1: Regional Classification of states in India**

Sl. No.	Regions	States/ UTs
1.	North-East	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
2.	North	Chandigarh, Delhi, Haryana, Himachal Pradesh, J&K, Punjab, Rajasthan, Uttarakhand
3.	Central	Chhattisgarh, Madhya Pradesh, Uttar Pradesh
4.	East	Bihar, Jharkhand, Odisha, West Bengal
5.	West	Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Maharashtra
6.	South	Andaman & Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu, Telangana

***Dependent variable***

Using a hygienic method of menstrual protection is important for women's health and personal hygiene. The dependent variable of this study is the usage of hygienic methods during menstruation. In NFHS-4, a multiple response question was asked to young women aged 15 to 24 about what method or methods they use for menstrual protection. The responses include whether they used cloth, locally prepared napkins, sanitary napkins, tampons, nothing, and others. In the present paper, all these methods were classified into two categories: hygienic and unhygienic methods. Hygienic methods include those women who use locally-prepared napkins, sanitary napkins, or tampons during their menstrual period (coded as '1'). All other methods used, such as cloth, any other methods and those women who used nothing, were considered as unhygienic methods (coded as '0').

***Independent variables***

The independent variables used in this study are age of the respondent in the two categories (15 to 19 and 20 to 24), place of residence (rural, urban), educational status of the respondent (no education, primary, secondary and higher, religion), caste group, wealth quintile, type of toilet, working status in the last 12 months, access to media, usually going to the cinema/theater at least once in a month, and region.

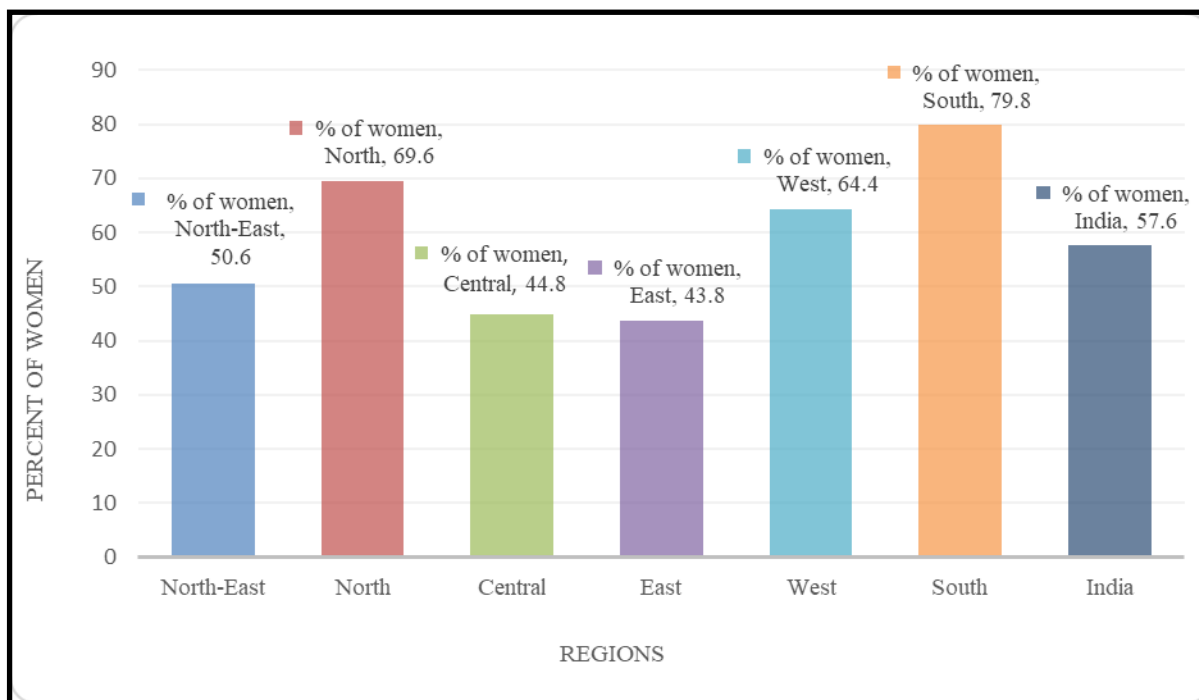
The household wealth index used as a proxy indicator of the standard of living and wealth quintile was calculated from the ownership of household assets, housing characteristics, and access to necessities. Exposure to mass media was assessed from the frequency of reading newspapers, watching television, and listening to the radio.

***Statistical Analysis***

In this study bivariate analysis was carried out to analyze the regional variations in hygiene practices with socio-economic and demographic factors. To find out the correlates of prevalence of the use of hygienic methods, multivariate logistic regression has been performed in which the individual effect of assorted background characteristics on menstrual hygiene practices are measured. Logistic regression determines the impact of multiple independent variables presented simultaneously to predict membership of one or the other of the two dependent variable categories. Odds ratios (OR) are accustomed to interpret the results of the predictor variables for each of the outcome variable. Odds greater than one indicates an increased probability, while those less than one indicate a lower probability. The 95% confidence interval (CI) for the odds ratio is also presented to establish the precision of the estimates. The data has been analyzed using IBM SPSS Statistics V20.

## RESULTS

## Regional variations in Usage of Hygienic Methods of Menstrual Protection



**Figure 1: Menstrual Hygiene Practices among Young Women in India by Region, NFHS-IV, 2015 to 16 (in percent)**

In Figure 1, it is clear that about 58% of the young women were using hygienic methods of menstrual protection in the country, while the regional analysis indicates a wide variation between geographical regions. The higher proportion of menstrual hygiene practices is found in the Southern region with the highest result of 80%, followed by the Northern region with 69.6%, and the Western region with 64.4%) and the lowest proportion was found in the Eastern region with 43.8%. These results also indicate the huge gap between good and poor performing regions.

***Type of Methods Used for Menstrual Hygiene***

**Table 2: Percentage of young women in India, ages 15-24, using sanitary menstrual hygiene methods according to region, NFHS-IV, 2015-16**

Type of Protection	North-East	North	Central	East	West	South	India
Cloth	74.4	53.9	80.0	73.5	49.4	36.3	62.1
Locally Prepared Napkins	13.0	14.9	13.7	13.5	21.1	21.2	16.3
Sanitary Napkins	36.7	56.3	30.8	29.3	45.0	60.4	41.8
Tampons	2.4	1.3	2.1	1.9	3.8	3.3	2.4

<b>Other</b>	0.1	0.1	0.0	0.1	0.1	0.0	0.1
<b>Nothing</b>	1.0	0.7	0.1	0.6	0.8	0.5	0.5

Note: Multiple responses, total may not be 100

The proportion of various menstrual hygiene methods used during menstruation according to regions is depicted in Table 2. The use of sanitary napkins, locally-prepared sanitary napkins, and tampons are considered as hygienic methods whereas clothes and other methods are considered as unhygienic methods in the present study. Overall, 62% of young women in India were using pieces of cloth during their menstruation: in Central (80%), North-East (74.4%), and East regions (73.5%). When it comes to the usage of sanitary napkins in India, about 42% were using it for menstrual protection: South (60%), North (56%), East (30%), and Central (30%).. Locally prepared napkins were utilized by only 16%, which was reported highest in the South and West region with 21% each. Finally, only 2.4% were reported using tampons for menstrual protection in India, which was also reported highest in the West (4%) and South (3%) regions.

**Regional Disparities and Differentials in Practicing Menstrual Hygiene Methods**

The regional disparities in practices of menstrual hygienic methods by various background characteristics is shown in Table 3. The use of hygienic methods during menstruation among women in the age group of 15 to 19 years old (57.7%) was almost the same compared to women in the age group of 20 to 24 years (57.4%). There is not much difference in these two age groups in various regions, except the South. The urban-rural disparity was perceptible, less than half of the rural young women (48.2%) used hygienic methods compared to urban areas (77.5%). The same kind of variation was observed in each region, except the South. The Central and East regions have the highest rural-urban differences with more than 31%. Table 3 also shows that as the level of education improved, the use of hygienic methods among women had also increased. Only 20% of uneducated young women used hygienic methods to prevent bloodstains from becoming evident during menstruation.

**Table 3: Percentage of young women in India, aged 15-24, practicing menstrual hygiene according to region and background characteristics, NFHS-IV, 2015-16**

<b>Background Characteristics</b>	<b>North-East</b>	<b>North</b>	<b>Central</b>	<b>East</b>	<b>West</b>	<b>South</b>	<b>India</b>
<b>Age-group (in years)</b>							
15-19	53.2	69.4	42.6	45.8	66.0	84.4	57.7
20-24	48.0	69.7	47.2	41.8	62.9	75.8	57.4
<b>Place of residence</b>							
Rural	45.1	60.7	36.7	37.3	55.1	73.8	48.2
Urban	74.8	85.1	68.1	68.9	75.1	87.5	77.5
<b>Education</b>							
No education	19.9	29.5	17.6	12.3	29.0	35.9	19.9
Primary	24.7	43.5	25.1	22.7	44.0	48.0	31.1
Secondary	53.9	74.0	46.1	50.0	63.7	80.2	60.1
High school & above	82.7	91.1	77.4	80.9	85.0	91.2	85.5

## 40 Factors Explaining Regional Variations in Menstrual Hygiene Practices

<b>Religion</b>							
Hindu	53.4	69.0	44.4	44.2	63.2	78.8	57.3
Muslim	33.1	61.5	45.6	41.9	67.6	84.5	53.9
Christian	68.0	86.1	67.0	48.5	86.5	83.1	74.9
Others	69.3	83.9	77.6	46.7	70.4	71.4	72.8
<b>Caste</b>							
Scheduled Caste	46.7	68.6	39.2	38.4	64.7	77.0	54.5
Scheduled Tribe	62.0	36.7	23.2	35.0	46.9	63.0	40.3
Other Backward Class	51.6	66.8	44.3	39.3	64.4	82.2	57.3
Others	49.7	82.8	63.9	58.1	71.1	81.7	68.9
<b>Wealth Quintile</b>							
Poorest	22.5	18.0	17.8	20.6	30.6	50.9	21.1
Poorer	39.1	41.4	32.4	39.5	46.7	63.7	41.3
Middle	63.5	60.3	47.7	60.0	59.3	73.0	60.4
Richer	81.1	77.3	65.3	77.5	70.8	85.8	76.2
Richest	89.0	91.6	84.1	90.9	83.5	93.5	88.8
<b>Type of Toilet</b>							
flush	66.3	80.8	64.0	64.2	72.4	85.9	73.6
pit/dry	40.3	71.4	47.3	49.6	71.0	81.0	56.7
no facility/ open space	32.7	39.7	28.3	27.5	46.3	68.9	37.2
others	53.7	62.9	49.9	45.7	63.4	72.9	56.8
<b>Access to Media</b>							
Not at all	20.4	25.6	18.5	17.4	33.8	52.1	20.9
Less than once a week	36.2	45.9	31.8	32.8	52.4	64.7	37.2
At least once a week	53.5	59.8	38.7	40.0	58.8	70.9	47.4
Almost everyday	66.3	78.8	60.3	61.5	69.3	81.3	70.7
<b>Usually go to cinema/ theatre at least once in a month</b>							
No	49.0	68.0	43.3	42.2	60.2	77.6	54.7
Yes	68.0	90.8	76.9	67.1	89.2	87.1	83.2
<b>Total</b>	50.6	69.6	44.8	43.8	64.4	79.8	57.6

The practice of hygienic methods was higher among young women with educational attainment above secondary education. A similar kind of trend has been evident in each region. The usage of hygienic methods was not much different among Hindu (57.3 %) and Muslim women (53.9 %) whereas it had been the highest among Christian women (74.9 %) in India. Regional disparities were also clearly visible as far as the religion is concerned, except in the Southern region. In Central and Eastern regions, the use of hygienic methods was almost equal among young women belonging to Hindu (44.4% & 44.2%) and Muslim (45.6% & 41.9%) religions. The lowest use of hygienic methods was reported among Muslim women from the North-Eastern region with 33.1%. The use of hygienic methods was high among Christian women in Western (86.5%) and Northern (86.1%) regions.

As far as the caste system is concerned, women belonging to the general category were highly using menstrual hygienic methods (68.9%) followed by women from other backward classes (57.3%) and the scheduled caste (54.5%). The proportion of women practicing hygienic methods among scheduled tribes (ST) were lower compared to women from other categories in all regions, except the North-East. The economic status of women seems to be a dominant factor in the usage of hygienic methods. It was highest among women belonging to the richest wealth quintile (88.8%) overall and shows similar pattern in all regions. Funding could be a big factor to purchase good quality menstrual hygiene protection products. The analysis indicates that those who have a flush-type toilet, garnered the highest percentage in practicing menstrual hygiene in all of India (73.6%). Women who have access to media almost every day were the highest users (70.7%) of menstrual hygiene methods compared to women with no access to media (20.9%). When it comes to women who practice hygienic methods and have access to media almost every day, the Southern region has the highest percentage (81.3%), followed by the Northern (78.8%) and Western (69.3%) regions. The study also recognized that a prime percentage of women (83%) who usually go to the cinema or theater were practicing menstrual hygiene methods compared to those who do not (55%). In the Northern region, more than 90% of women who go to the cinema or theater were practicing hygienic methods, followed by women from the Western region (89.2%), and the Southern region (87.1%).

**Factors Responsible for Practicing Menstrual Hygienic Methods**

Table 4 presents the multivariate logistic regression analysis to find out the socio-demographic correlates of menstrual hygiene practices among young women.

**Table 4: Odds Ratio for practicing menstrual hygienic methods according to background characteristics of young women in India**

Background Characteristics	Odds Ratio	CI (95%)
<b>Age-group (in years)</b>		
15-19®	1.00	
20-24	0.786***	0.770 – 0.802
<b>Place of residence</b>		
Rural®	1.00	
Urban	1.416***	1.380 – 1.452
<b>Education</b>		
No education®	1.00	
Primary	1.381***	1.318 – 1.448
Secondary	2.780***	2.677 – 2.887
High school & above	6.334***	6.037 – 6.646

<b>Religion</b>		
Hindu®	1.00	
Muslim	0.889***	0.863 – 0.917
Christian	1.532***	1.412 – 1.662
Others	1.403***	1.318 – 1.493
<b>Caste</b>		
Scheduled Caste®	1.00	
Scheduled Tribe	0.879***	0.847 – 0.913
Other Backward Class	0.941***	0.917 – 0.966
Others	1.163***	1.127 – 1.200
<b>Wealth Quintile</b>		
Poorest®	1.00	
Poorer	1.630***	1.577 – 1.683
Middle	2.350***	2.266 – 2.437
Richer	3.585***	3.434 – 3.743
Richest	6.419***	6.094 – 6.762
<b>Type of Toilet</b>		
Flush®	1.00	
Pit/Dry	0.983	0.944 – 1.025
No facility/Open space	0.832***	0.810 – 0.855
Others	1.041	0.997 – 1.087
<b>Access to Media</b>		
Not at all®	1.00	
Less than once a week	1.402***	1.343 – 1.462
At least once a week	1.667***	1.604 – 1.732
Almost everyday	2.003***	1.937 – 2.071
<b>Usually go to Cinema/Theater at least once in a month</b>		
No®	1.00	
Yes	1.506***	1.446 – 1.568
<b>Regions</b>		
North-East®	1.00	
North	1.273***	1.193 – 1.358
Central	0.714***	0.671 – 0.760
East	0.908	0.854 – 0.965
West	0.887***	0.832 – 0.946
South	1.872***	1.756 – 1.996

Note: \*\*\* p<0.001

The results of the logistic regression shows that most of the predictor variables fitted in the model were statistically significant. Women who are in the 20 to 24-year-old age group were less likely (OR: 0.79, p<0.001) to use menstrual hygiene methods compared to the 15 to 19-year-old age group. Women staying in urban areas were 42% more likely to practice hygiene during menstruation compared to those living in rural areas. The educational status is also a major determining factor in practicing hygienic methods. Women who are educated up to



high school or above were six times more likely (OR: 6.3,  $p < 0.001$ ) to use hygienic methods during menstruation compared to uneducated women, and it is statistically significant (see table 4). Compared to women belonging to the Hindu religion, the usage of hygienic methods were 53% higher among Christian women (OR:1.53,  $p < 0.001$ ) and 40% higher among women belonging to other religions (OR:1.40,  $p < 0.001$ ). The wealth index has a very strong positive association with menstrual hygiene practices. Women from the richest wealth quintile were more than six times likely to practice hygienic methods compared to those from the poorest wealth quintile (OR: 6.4,  $p < 0.001$ ). Highest odds were observed among women from other caste categories compared to women from the scheduled caste. The likelihood of using menstrual hygiene methods were also two times higher (OR:2.00,  $p < 0.001$ ) among those who were accessing media almost every day compared to those who did not access media at all. The prevalence of hygienic methods among women who usually go to the cinema or theater, at least once a month, were comparatively higher (OR: 1.51,  $p < 0.001$ ); and it is statistically significant. As far as the region is concerned, the likelihood of practicing menstrual hygiene methods among young women was higher in the Southern region (OR: 1.87,  $p < 0.001$ ) and the Northern region (OR: 1.27,  $p < 0.001$ ), while it was lesser in the Eastern, Western and Central regions compared to the reference category (i.e., North-Eastern region).

## DISCUSSION

A hygienic menstrual absorbent helps young women to manage menstruation effectively, safely, and comfortably. The present study found that the use of hygienic methods of menstrual protection among young women (15 to 24 years old) was low. Previous studies conducted in India also reported low levels of menstrual hygiene practices (Anand et.al, 2015; Kathuria & Raj, 2018; Mudey et. al., 2010). About 57% of the women were using hygienic methods during menstruation in India: only 44% in Central and Eastern regions, while 80% in the Southern region. The high percentage of practicing hygiene methods may be due to high educational status, awareness level, and availability of good sanitation facilities in the Southern region.

The study observed that the line of division between rural and urban becomes stark. The use of hygienic methods during menstruation among young women was 41% more likely in urban areas compared to rural areas. Another study by Anand et al. (2015) reported that the use of hygienic methods among unmarried women in urban areas was 52%, while rural areas was 25%. Paria et al. (2014) revealed in their study that the use of sanitary pads was higher among girls in urban areas (64%) in comparison to rural areas (45%). A similar kind of result was also observed in another study by Thakre et al. (2011). The possible reasons may be due to lack of knowledge and poverty compared to urban women. Other contributing factors include, rural women do not have a toilet facility and are accustomed to defecating in the open; they do not use undergarments and sanitary napkins cannot be used without an underwear. There are also cultural barriers involved like women who avoid buying sanitary napkins from shops with male shopkeepers due to shame. Since, traditionally, women are using pieces of cloth and unhygienic rags as alternatives because these are inexpensive, they convince their daughters and daughters-in-law to do the same. Rural women also find it comfortable to stick to using washable pieces of cloth because disposing of the pads needs to be handled sensitively to avoid further complicated unhygienic conditions (Chakravarty, 2016).

One of the imperative determinants of using hygienic methods is the socio-economic status (Garg, Goyal, & Gupta, 2012; Thakre et. al., 2011; Umar, Yusuf, & Musa, 2010). There was also a huge gap in practicing hygienic methods among literate and illiterate women and women who belong to the poorest and richest wealth quintile. This study shows that highly educated women were six times more likely to use hygienic methods compared to uneducated women. This finding corroborates with many earlier studies (Anand, Unisa, & Singh, 2015; Anand, Singh, & Unisa, 2015). Several studies revealed that the rationale for not using sanitary napkins was affordability. The authors found that the use of hygienic methods is more than six times among women in the richest wealth quintile compared to women in the lowest wealth quintile. Women from the poor wealth quintile cannot afford these commercial menstrual hygiene products (Sharma, 2018; Ghatak, 2016). Our study findings also support the studies done by Anand et al (2015) and Kamath et al (2013). The cost of sanitary napkins are an important barrier in India. On an average, total expenditure of Rs.48 for sanitary napkins is required during menstruation and it is expensive for Indian standards (Garg, Goyal & Gupta, 2012). Therefore, purchasing sanitary pads is a big financial challenge for women from poor families.

Concerning religion, our study says, Muslim women were less likely to use hygienic methods during menstruation compared to Hindu women, while women from Christian and other religious groups were more likely to practice hygienic methods compared to Hindu women. Previous studies conducted in India corroborates this findings ( Anand, Singh & Unisa, 2015; Anand, Unisa & Singh, 2015; Kathuria & Raj, 2018).

Across the nation, women and girls face three types of toilet insecurities: (1) the material reality that they do not have the access to toilets; (2) even if they have access to public toilets, the toilet is unusable or unsafe to use; and (3) they accept the risk of open defecation (O'Reilly, 2016). Therefore, a well-functioning toilet facility is very essential for women to ensure privacy in changing sanitary pads during their menstrual period. It has been revealed from this study that young women who had flush toilets in their homes were using hygienic methods more than women who do not own a toilet facility or those who opt to defecate in open spaces. This study also corroborates the studies conducted by Singh and Anand (2018), Anand et al. (2015), and Kamal and Rashid (2004).

The effect of exposure to media and its significant association with menstrual hygiene was visible in our study. This study observed that the usage of hygienic methods during menstruation was more than two times higher among those women who have exposure to any mass media almost every day compared to those who do not have access at all. Patil (2014) showed in her study that the level of menstrual hygiene increases with an increase in time spent on watching television or listening to the radio. Another study conducted by Afiaz and Biswas (2021) found that women who had mobile phones and regular access to the media were 43% more likely to use menstrual hygienic methods. It indicates that the media can play a significant role in making awareness and in improving menstrual hygiene practices.

In short, the major factors that affect the usage of hygienic methods of menstrual protection are: place of residence, educational status, wealth status, type of toilet, and exposure to mass media. Apparently, accessibility, affordability, and lack of awareness were the primary reasons for the use of unhygienic menstrual absorbents, especially among rural women. Thakre et al. (2011) observed that the reasons for not using sanitary pads were lack of knowledge (30.3 %), high costs (30.9 %), unavailability and shyness. Mahajan et al. (2017) also found some barriers in using sanitary napkins which were: lack of awareness, limited availability of the product at economical prices, non-availability in the rural and interior areas, no space for cleaning/changing, absence of toilets, shyness to buy napkins from shops, lack of disposal facilities, and financial constraints.

### ***Regional Variations***

Our study documented the regional variations in menstrual hygiene practices in India. A recent study by Goli (2020) reported that a striking geographical disparity exists in the use of menstrual hygiene absorbents. As far as the region is concerned, the Southern region is performing better in menstrual hygiene management, followed by the Northern and Western regions.. Toilet facilities, accessibility and availability are also higher in Southern states like Kerala and Tamil Nadu. These states have their own programmes for the management of menstrual hygiene apart from the Central government scheme of Rashtriya Kishore Swasthya Karyakram (RKSK). However, the implementation and execution in various levels need more attention in certain regions, especially in Eastern and Central regions.

In Southern and Northern regions, more than 80% of young women who have flush toilets in their homes were using hygienic methods, while only 64% in Central and Eastern regions (see Table 3). Another interesting finding was that, about 70% of the women without a toilet facility were practicing hygienic methods in the Southern region, while it was only 28% in Central and Eastern regions.. The state of Tamil Nadu, was the first state in India to take lead in promoting menstrual health and hygiene. Tamil Nadu state launched the first sanitary napkin scheme in India for women, including girls (NFFSM, 2019). In Kerala, the government has launched a "She pad" scheme in the state to ensure menstrual hygiene among girls studying in classes 6 to 12 (Nair, 2018). These factors also contributed to better management of menstrual hygiene in the state. In the Southern region, more than 80% practiced menstrual hygiene and those who have exposure to mass media every day; followed by the Northern region with 78.8%; the Western region with 69.3%; and the lowest was reported in the Central

region with 60.3%. In the Southern region, the media have a very strong influence on young women's hygiene; and doing a lot of IEC activities was also found to have the highest percentage of hygiene practice.

## CONCLUSION

Among reproductive health issues, menstruation and its hygiene are neglected areas; hence, young women must have adequate and accurate information about menstruation and its management. The study concludes that women in the richest quintile, with higher education, living in urban areas, with higher awareness and attitude, have flush toilets at home, and have access to media every day were more likely to use menstrual hygiene methods. Among the regions, the Southern region was performing better, followed by the Northern and Western regions. More attention is required for the Eastern and Central regions.

Economical constraints is the main reason for avoiding hygiene practices during menstruation. Hence, locally made sanitary napkins may be provided at cheaper rates. The government has to commit a budget for free distribution of sanitary pads and promote reusable methods and distribute it for free or at least retail it in nominal rates through rural health care providers, such as ANMs or Anganwadi workers at a village level. The use of menstrual cups is also ideal because it can be reused for five to ten years and is environmentally friendly. It offers sustainable, practical and cost-effective alternatives where sanitary conditions are not good. Without addressing the toilet facility at a household level with a running water facility, it is not likely to get the desired outcome. For the last few years under Swachh Bharat Mission, many new toilets have been constructed in the country. However, the mission needs to assure the availability of water supply at the toilets, so that the purpose may be solved. Media awareness is also another key player to improve menstrual hygiene practice. Both women and men need to be made aware about the importance of maintaining hygiene practices during menstruation. Targeted intervention is required to be introduced for socio-economically vulnerable women to address this issue. Ensuring menstrual hygiene should be the top priority of developmental agenda, which calls for urgent and intensive action from all relevant stakeholders to change the scenario of menstrual hygiene in India.

## LIMITATIONS

Our study has certain limitations. The National Family Health Survey (NFHS-4) provides the data of menstrual hygiene practices among women who are 15 to 24 years old only. The data are self-reported, and therefore, subject to recall bias. In the Indian society, socio-cultural norms play a crucial role in deciding the behavioral practice of young women. Therefore, menstrual hygiene practices might be controlled by many socio-cultural factors and existing customs. The researchers could not include these factors in the analysis due to lack of information in the dataset. Detailed qualitative research is required to study the socio-cultural norms pertaining to the access and use of hygienic methods among young women.

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