Factors Associated with Disposable Menstrual Absorbent Use Among Young Women in India

CONTEXT: *Hygienic use of absorbent products during menstruation is a challenge for young women in India, especially among the underprivileged, who lack knowledge and access to resources. Reuse of menstrual absorbents can be unhygienic and result in adverse health and other outcomes.*

METHODS: *Data from the 2015–2016 National Family Health Survey–4 for 233,606 menstruating women aged 15–24 were used to examine levels and correlates of exclusive use of disposable absorbents during menstruation. Bivariate and logistic regression analyses were conducted to identify disparities in exclusive use by such characteristics as caste, mass media exposure and interaction with health workers.*

RESULTS: *Exclusive use of disposable absorbents was low among young women overall (37%), and varied substantially by caste and other characteristics. Compared with women from general castes, those from scheduled castes, scheduled tribes and other backward classes had reduced odds of exclusive disposable absorbent use (odds ratios, 0.8–0.9). Disposable absorbent use was negatively associated with lower levels of education and household wealth, and rural residence. Compared with women who reported daily media exposure, those exposed less frequently had reduced odds of disposable absorbent use (0.7–0.9). Among those who recently met with a health worker, odds of use were lower if menstrual hygiene had not been discussed (0.9).*

CONCLUSIONS: *Promoting awareness of proper menstrual hygiene—through education, media campaigns and discussion with reproductive health workers—and targeted interventions to disseminate and subsidize the purchase of disposable sanitary napkins should be pursued to address health disparities.*

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The onset of menstruation heralds a significant change in girls' lives. It initiates the transition to adulthood and–particularly in traditional societies–ushers in numerous challenges, concerns and misconceptions regarding physiological changes, and social and psychological adjustments.

In India, the setting of this study, menstruation is perceived as being unclean or embarrassing, and women are inhibited about discussing it with friends or family members, especially males.[1,2] Young women are generally subjected to numerous restrictions, leaving them with limited freedom and control over their lives and bodies.[3] These restrictions are even more oppressive during menstruation, including taboos ranging from isolation to exclusion from social and religious celebrations, bathing and sexual intercourse.[1,4,5] Menstruating women in rural areas are prohibited from consuming sour food, shampooing their hair and wearing washed clean clothes;[4] in urban slums they are denied kitchen entry and are made to sit separately.[6] Adolescent girls express feeling depressed, isolated and irritated in response to their restrictions during menstruation, as well as feeling uncomfortable mixing with family members and friends, participating in various household and social activities, and attending school.[1] Many in India miss days of school every month during their menstrual period because of mobility restrictions,[5,7] fear and humiliation from leaking of blood and body odor,[8] and lack of disposal facilities in schools.[1,9]

Young women in India lack information about menstruation and its hygienic management before onset.[1,10–12] One important element of menstrual hygiene management is the choice and proper use of materials to absorb blood. Lack of knowledge regarding menstruation and associated hygienic practices–along with unscientific attitudes, myths and misconceptions–adversely affects women's health.[1,13] Indian women in Odisha who used reusable absorbent pads were more likely than those who used disposable pads to experience symptoms of urogenital infection or receive an urogenital infection diagnosis.[14] A strong and consistent positive association has been found between prevalence of lower reproductive tract infections (RTIs) and poor menstrual hygiene practices (e.g., using reusable old cloths, changing an absorbent outside a toilet facility, changing once per day, washing only once per day, keeping dried reusable old cloths inside the house, storing reusable cloths in a toilet).[15] In addition, one in eight menstruating ever-married women in India suffer from at least one type of menstrual problem (e.g., irregular periods, prolonged pain).[16]

The consequences of poor menstrual hygiene are often severe and long-lasting. Research has documented elevated prevalence of reproductive tract, urinary, vaginal and perineal infections among women who used nondisposable

menstrual absorbents.[11,14,15,17,18] Untreated RTIs can cause cervical cancer, pelvic inflammatory disease, ectopic pregnancy and related maternal mortality.[19] In addition, a higher prevalence of infertility was found among women who use unclean materials (e.g., cotton, unwashed rags, washed rags dried indoors) to absorb menstrual flow than among those who used disposable materials.[20] Infertility resulting from poor menstrual hygiene can result in lowered social status and poor psychological well-being, particularly in societies such as India where infertility carries great social stigma.[21,22] Marital instability, physical and emotional abuse, abandonment, social ostracism and exclusion from participation in social celebrations and ceremonies have been found to be more common among infertile individuals.[23–26]

Previous research in various Indian states has documented widespread disparities in women's choice of menstrual absorbents by region, and by socioeconomic and demographic characteristics.[1,27,28] Use of disposable absorbents has been shown to be low among women in rural areas,[1,12,29] Muslim women[4,29] and those from low-income families,[1,4,16,29,30] while educated women and those born to educated mothers or living in nuclear families report higher use of such materials.[1,4] Among young women in India's socioeconomically disadvantaged Empowered Action Group (EAG) states, increased exposure to mass media was positively associated with use of disposable absorbents;[29] in addition, women's odds of using disposable absorbents varied significantly across regions within the EAG states. Similar associations between exposure to media and menstrual hygienic practices (e.g., type of absorbent used, changing of absorbent) were observed among adolescent girls in Uttar Pradesh.[1]

In India, caste—one's ascribed social subgroup—plays a pivotal role in determining access to social and economic resources.[31,32] Social and health research differentiate between four castes: scheduled castes, scheduled tribes, other backward classes and general castes.[32–35] Compared with general castes, the others typically lag considerably on most socioeconomic development and health indicators, including awareness and utilization of health care services.[36] Women from these socially disadvantaged groups tend to experience higher levels of preventable reproductive health problems and have lower knowledge of hygienic menstrual practices.[36–39] Evidence from micro-level studies, though scanty, suggests that women from socioeconomically deprived castes are much less likely than those from general castes to use safe menstrual practices.[1,4,39,40]

No previous studies in India have examined menstrual hygiene practices across a nationally representative sample. The present study does so by examining variations in disposable absorbent use during menstruation among women aged 15–24 by caste, and by other socioeconomic and demographic factors, including exposure to mass media. Findings may guide the development of targeted interventions to promote use of disposable absorbents during menstruation among young women in aims of improving reproductive health outcomes.

METHODS

Data and Sample

For this study, we used data (version 73FL) from the National Family Health Survey–4 (NFHS–4), a nationally representative survey conducted in 2015–2016.[36] The NFHS–4 provides data for a wide range of monitoring and impact evaluation indicators in the areas of population, health and nutrition. The survey adopted a stratified two-stage sampling method. India's 2011 census served as the sampling frame for the selection of primary sampling units (PSUs): villages in rural areas and census enumeration blocks (CEBs) in urban areas. Within each rural stratum, villages were selected from the sampling frame with probability proportional to size (PPS). In each district, six approximately-equal substrata were created by crossing three substrata (created based on the estimated number of households in each village) with two substrata (created based on the percentage of the population belonging to scheduled castes and tribes). Before selecting the PSUs, those within each explicit sampling stratum were arranged by the level of female literacy. In the urban areas, CEBs were arranged by the percentage of scheduled castes and scheduled tribes population in each CEB, and sample CEBs were selected using the PPS method. The selection of households within a PSU preceded the household mapping and listing operation. Households were randomly selected with systematic sampling in each of the selected PSUs for the main survey. The sampling weights were computed and provided in the data file.

Bilingual questionnaires (vernacular and English) were used to collect information from ever-married women aged 15–49 and never-married women aged 15–24 from sampled households. A total of 699,686 eligible women were surveyed from 601,509 households across every district and state; the overall response rate was 98%. Informed consent procedures were followed and only those respondents who voluntarily consented to participate were included. The consent of minor respondents (unmarried women younger than 18) was obtained from their parents or guardians.

Of the 247,833 women aged 15–24 surveyed, 1,649 reported that they had never menstruated and were thus excluded from our sample. Data on menstrual hygiene products used to prevent bloodstains from becoming evident were collected from 246,184 menstruating women aged 15–24, including 11,623 who were visitors to the surveyed households. Information regarding household characteristics was not collected from visitors, however, so these women were excluded. Information on one or more variables included in the analysis was missing for 955 women, resulting in a final sample of 233,606 menstruating women aged 15–24 who were residents of the surveyed households.

Measures

• *Dependent variable*. Respondents were asked what they use, if anything, for protection during their menstrual period to prevent bloodstains from becoming evident; response options included cloth, sanitary napkins, tampons, locally prepared napkins,* any other method not included previously, and nothing. The interviewer probed for multiple methods of protection by asking "Anything else?"; all methods a respondent reported were recorded.

We created a binary outcome variable of exclusive use of disposable absorbents, defined as use of one or more of the following products: sanitary napkins, tampons and locally prepared napkins. These are commercially manufactured to be used once and then discarded, and are therefore likely to be hygienic and safe. Women who reported exclusive use of materials not classified as disposable, use of both disposable and reusable absorbents, or not using any menstrual absorbents were classified as not exclusively using disposable absorbents. Our classification is similar to ones used in published research using similar data.[16,29,41]

• *Independent variables*. We selected a number of individual-, household- and community-level measures. Caste was classified into four categories: general castes, scheduled castes, scheduled tribes and other backward classes. We included categorical variables for the respondent's age (15–17, 18–20 and 21–24), her number of completed years of schooling (five or fewer, 6–9, 10–12 and more than 12) and her religion (Hindu; Muslim; Christian; and other, which included no religion). A measure of the type of home in which the woman resided was based on her relationship with the household head and was classified into marital home (spouse, daughter-in-law or sister-in-law of the household head), natal home (daughter, granddaughter or niece of the household head), and other's home (e.g., nonrelatives such as domestic servants working in the household, orphans, deserted young women). Region of residence was classified according to the standard classification in India: southern, western, northern, central, eastern and north-eastern.† A dichotomous variable measured urban or rural residence. Household wealth was measured in quintiles. For computing the wealth index, households were scored based on the number and kind of consumer goods they own, ranging from a television to a bicycle or car, and such housing characteristics as source of drinking water, toilet facilities and floor materials. These scores were derived using principal component analysis.[36]

Finally, household education was defined as the highest educational attainment of any usual resident female member of the household aged 15 or older; categories were the same as those for the individual-level measure. In some instances, household education was the same as the respondent's education.

In addition, we included three variables related to access to mass media, given findings from previous research of a relationship between media exposure and use of disposable absorbents during menstruation.[1,29] Women were asked how often they read a newspaper or magazine, watched television and listened to the radio; for each, response options were almost every day, at least once per week, less than once per week and never. For some analyses, we combined the measures into a composite variable of exposure to any mass media (newspaper/magazine, TV or radio), with the categories pared down to almost every day, at least once per week and rarely or never.

Finally, we included a measure of a respondent's interaction with a health worker; previous research has found that provision of hygienic absorbents by health workers at subsidized cost increases use.[39] Women were asked whether they had met with a health worker—including an auxiliary nurse midwife (ANM), accredited social health activist (ASHA), anganwadi worker‡ (AWW, also known as Integrated Child Development Services worker), multipurpose worker (MPW), or any other community health worker—during the three months prior to the survey. Responses were grouped into three categories: met with a health worker and discussed menstrual hygiene, met with a health worker but did not discuss menstrual hygiene and did not meet with a health worker.

Analysis

We calculated descriptive statistics for the overall sample and for the four caste groups. We performed chi-square tests to determine whether differences exist across categories within each characteristic and in the distribution of values across castes. Next, we conducted bivariate analyses to examine individual associations between the outcome and independent variables for the overall sample and for the four caste groups. Variables found to be independently associated with the outcome and not highly correlated with other independent variables were included in our multivariate models. We dropped woman's age and household education because they were not significant in the bivariate analysis. The combined association of the three mass media exposure subcomponent variables was captured in the composite variable. The results for each of the three media categories in the bivariate analysis were similar to those for them combined; thus, the composite variable was used in the multivariate analysis.

We conducted logistic regression analyses using four models to identify factors independently associated with

*Locally prepared napkins refer to low-cost sanitary napkins usually manufactured by women's organizations, women's self-help groups, small-scale village-based industries, or nongovernmental organizations, using indigenous technology or environmentally friendly substitutes for imported wood-pulp sanitary napkins.

†Southern region consists of Andaman Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu and Telangana; western consists of Dadra Nagar and Haveli, Daman and Diu, Goa, Gujarat and Maharashtra; Northern consists of Chandigarh, Haryana, Himachal Pradesh, Jammu and Kashmir, New Delhi, Punjab, Rajasthan and Uttarakhand; central consists of Chhattisgarh, Madhya Pradesh and Uttar Pradesh; eastern consists of Bihar, Jharkhand, Odisha and West Bengal; and north-eastern consists of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

‡Anganwadi workers are grassroots workers within the Integrated Child Development Services scheme, which aims to meet the basic health and nutritional needs of children, adolescent girls and lactating mothers.

young women's exclusive use of disposable absorbents. The first model provides age-adjusted odds ratios for the independent association of each variable with the outcome. The second model examines the associations between exclusive disposable absorbent use and individual-level variables, controlling for the other individual-level variables and adjusting for woman's age; the third model examines the associations between the outcome and household- and community-level variables, controlling for the other household- and community-level variables, and adjusting for woman's age. Finally, the fourth model controls for all of the variables, with odds ratios adjusted for woman's age. The analyses were conducted using STATA 15.

RESULTS

Descriptive Statistics

Twenty-five percent of the young women in the sample belonged to the general castes, 21% to scheduled castes, 10% to scheduled tribes and 44% to other backward classes. The mean age of the women was 19.4 and did not vary across castes. The median level of education of young women was 10 years of schooling; 19% of women had five or fewer years of schooling (Table 1). The majority of women surveyed were Hindu (79%), and 16% were Muslims. Some 64% of women lived in their natal home and 35% in their marital home. The largest proportion of surveyed respondents lived in the central region (27%), followed by the eastern region (23%); two-thirds of women (68%) lived in rural areas. Respondents were fairly evenly divided across household wealth quintiles, with only slightly fewer at the outer ends (19% richest, 18% poorest) than in the middle three quintiles (21% each). Twenty-three percent of women lived in the most educated households (i.e., those with a female household member with more than 12 years of schooling), and 15% lived in households with the lowest educational status (five or fewer years of schooling).

Young women's exposure to print media was limited, with 68% reporting reading newspapers or magazines less than once a week or never. Exposure to the radio was even lower, as 88% of women reported listening less than once a week or never. However, 62% of women watched television almost every day, and another 10% at least once per week. Overall, 65% of women reported exposure to at least one type of mass media almost every day.

Three-fourths of young women reported not meeting with a health worker in the three months prior to the survey. Twenty-four percent of women had met with a health worker but did not discuss menstrual hygiene, and just 1% had discussed menstrual hygiene with a health worker within three months of the survey.

The median number of years of schooling was lower among women from scheduled tribes and from scheduled castes (eight and nine years, respectively; not shown) and higher among those from general castes and other backward classes (10 years each). The greatest proportion of young women from scheduled castes (26% and 24%) and from scheduled tribes (24% and 25%) lived in the central and eastern regions, respectively, which is roughly in keeping with the full survey. Some 26% of women from general castes were in the eastern region, and 21% were in the western region; 32% of the women from other backward classes were residing in the central region, and 25% in the southern region. The proportion of women living in an urban area was highest among women from general castes and lowest among women from scheduled tribes (43% and 15%).

Forty-one percent of the women from scheduled tribes were in the poorest wealth quintile, compared with only 9% from general castes; 31% of women from the general castes were in the richest wealth quintile, compared with just 6% from scheduled tribes. The proportion of women living in the most educated households was highest among women from general castes and lowest among those from scheduled tribes (30% and 10%, respectively). Women from scheduled tribes had the lowest exposure to any mass media, with 36% reporting never or rarely accessing print media, radio or television. The proportion of young women from scheduled tribes (29%) and scheduled castes (26%) that met with a health worker during the past three months without discussing menstrual hygiene was higher than that among other backward classes (23%) and general castes (22%),

TABLE 1. Percentage distribution of menstruating women aged 15–24, by selected characteristics, according to caste, National Family Health Survey–4, India, 2015–2016

Characteristic	All (N=233,606)	Caste			
		General (n=54,123)	Scheduled (n=43,729)	Scheduled tribes (n=42,487)	Other backward classes (n=93,267)
Age					
15–17	30.1	28.6	30.3	29.3	30.9
18–20	31.3	31.0	31.6	32.2	31.3
21–24	38.6	40.4	38.2	38.6	37.8
Education (in yrs.)					
≤5	18.7	12.2	21.6	30.9	18.3
6–9	30.5	28.1	34.0	36.9	28.7
10–12	34.4	38.2	31.6	25.1	35.7
>12	16.4	21.6	12.9	7.1	17.3
Religion					
Hindu	79.1	64.9	89.3	86.0	80.7
Muslim	15.8	30.0	2.1	2.6	17.3
Christian	2.1	1.6	2.0	7.7	1.1
Other	3.1	3.5	6.7	3.7	1.0
Type of home					
Marital	35.3	32.8	37.4	41.0	34.5
Natal	63.6	66.0	61.6	57.4	64.5
Other	1.1	1.2	1.0	1.6	1.0
Region of residence†					
Southern	19.4	11.4	21.0	10.9	25.2
Western	13.5	20.6	10.1	19.7	9.7
Northern	13.8	17.3	16.8	10.1	11.2
Central	26.8	19.3	26.3	24.2	31.8
Eastern	23.0	25.8	24.1	25.3	20.3
North-eastern	3.5	5.7	1.7	9.8	1.8
Urban–rural residence					
Urban	32.4	42.6	27.5	15.0	32.8
Rural	67.6	57.4	72.5	85.0	67.2

continued

although our analysis does not specify whether this difference is statistically significant.

Bivariate Findings

• *Overall.* Nationally, 37% of the young women surveyed reported exclusive use of hygienic disposable absorbents during menstruation (Table 2). Exclusive use varied by all sociodemographic attributes of the respondents, except for age. For example, the proportion of exclusive users increased consistently as women's years of schooling increased, from 12% among those with the least education to 63% among those with the most. The proportion of Muslim women who reported exclusive use was smaller than that among Hindu or Christian women (31% vs. 37% and 52%, respectively). Exclusive use was also lower among women who lived in a marital home than among those living in their natal home (30% vs. 41%).

Sixty-three percent of women residing in the southern region consistently used disposable absorbents, compared with only 19% of women in the central region. Exclusive use was higher among women in urban areas than among those in rural areas (57% vs. 27%). Exclusive use varied widely by household wealth, ranging from 68% among women in the richest quintile to 9% among those in the poorest. Furthermore, 12% of women in the least educated households used only disposable absorbents, compared with 61% in the most highly educated households.

All of the mass media exposure variables were individually and collectively positively associated with exclusive use of disposable absorbents. For example, the proportion using disposable absorbents was substantially greater among women exposed to any of these forms of media almost every day than among those exposed once or more per week (48% vs. 25%), which in turn was greater than the proportion among those rarely or never exposed (12%). Finally, the proportion of women exclusively using disposable absorbents was slightly greater among women who had met with a health worker in the previous three months and had discussed menstrual hygiene than among those who had not met with a health worker (42% vs. 39%); surprisingly, use was lowest among women who had met with a health worker but had not discussed menstrual hygiene (32%).

• *Caste subgroups.* Exclusive use of disposable absorbents varied within and across castes. Forty-six percent of young women from general castes exclusively used disposable absorbents, compared with 35–36% of those from scheduled castes and other backward classes, and only 23% of those from scheduled tribes (Table 2). The disparities in exclusive use by socioeconomic and demographic attributes seen among the full sample were broadly similar across caste subgroups but deepened for women from the more deprived subgroups. For example, although exclusive disposable absorbent use did not differ by age-group among women from general and scheduled castes, it increased slightly with age among women from other backward classes (from 35% among 15–17-year-olds to 37% among 21–24-year-olds); conversely, use decreased by age among women from scheduled tribes (from 25% to 21%). Exclusive use increased substantially with increased education among women from all four caste subgroups, but the pattern was particularly pronounced among women from scheduled tribes (from 9% among those with five or fewer years of schooling to 53% among those with 12 or more) and other backward classes (from 11% to 61%). The difference in levels of hygienic practices from poorest to richest household wealth quintile was roughly six times as high among women from general castes (12% vs. 71%) and from scheduled tribes (9% vs. 58%), but was seven

TABLE 1 (continued)

Characteristic	All (N=233,606)	Caste			
		General (n=54,123)	Scheduled (n=43,729)	Scheduled tribes (n=42,487)	Other backward classes (n=93,267)
Household wealth quintile					
Richest	18.6	30.5	11.1	5.6	18.3
Richer	20.9	23.7	18.0	10.1	23.0
Middle	21.4	19.8	23.4	16.5	22.4
Poorer	21.1	16.9	24.8	27.0	20.3
Poorest	18.1	9.2	22.8	40.8	16.0
Household education (in yrs.)‡					
≤5	14.6	9.4	17.1	24.6	14.1
6–9	27.5	23.4	31.6	36.3	25.9
10–12	35.4	37.3	33.3	28.8	36.8
>12	22.5	29.9	18.0	10.4	23.2
Read newspaper/magazine					
Almost every day	15.2	20.7	11.6	7.3	15.6
≥once per week	16.5	19.7	14.5	11.7	16.7
<once per week	19.4	19.2	19.1	16.9	20.2
Never	48.9	40.4	54.8	64.1	47.5
Watched television					
Almost every day	62.2	69.4	62.0	45.0	62.0
≥once per week	10.0	9.6	10.2	14.5	9.3
<once per week	6.6	5.5	6.4	9.3	6.7
Never	21.2	15.6	21.5	31.2	22.0
Listened to radio					
Almost every day	4.7	6.0	4.3	3.2	4.5
≥once per week	6.8	8.4	6.3	6.1	6.3
<once per week	6.3	6.6	6.0	6.0	6.3
Never	82.2	79.0	83.5	84.7	82.9
Exposure to newspaper/TV/ radio§					
Almost every day	65.2	72.8	64.5	47.7	65.1
≥once per week	11.4	10.5	11.7	16.0	10.8
Rarely/never	23.3	16.7	23.8	36.3	24.0
Interacted with health worker††					
Met, MH discussed	1.0	0.8	1.0	0.9	1.0
Met, MH not discussed	23.8	21.5	26.4	28.5	22.7
Did not meet	75.3	77.7	72.6	70.5	76.2
Total	100.0	100.0	100.0	100.0	100.0

†Southern region consists of Andaman Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu and Telangana; western consists of Dadra Nagar and Haveli, Daman and Diu, Goa, Gujarat and Maharashtra; northern consists of Chandigarh, Haryana, Himachal Pradesh, Jammu and Kashmir, New Delhi, Punjab, Rajasthan and Uttarakhand; central consists of Chhattisgarh, Madhya Pradesh and Uttar Pradesh; eastern consists of Bihar, Jharkhand, Odisha and West Bengal; and north-eastern consists of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. ‡Defined as highest educational attainment of any usual resident female member of the household aged 15 or older. §Woman either read newspaper/magazine, watched television or listened to a radio. ††Met with auxiliary nurse midwife, accredited social health activist, anganwadi worker, multipurpose worker or any other community health worker within three months prior to the survey. *Notes*: For all variables, chi-square test found differences between categories to be significant at p<.001 among all women and within a caste, and differences within a category to be significant at p<.001 across castes. MH=menstrual hygiene.

TABLE 2. Percentage of young women who exclusively used disposable methods for menstrual bloodstain prevention, by selected characteristics, according to caste

Characteristic	All	Caste			
		General	Scheduled	Scheduled tribes	Other backward classes
All	37.0	45.9	34.7	23.0	36.2
Age					
15–17	36.5	45.9	34.8	24.8	34.9
18–20	37.2	46.0	34.6	23.3	36.6
21–24	37.3	45.8	34.6	21.4	37.0
Education (in yrs.)					
≤5	12.2	16.7	13.3	9.2	11.0
6–9	23.2	28.2	23.0	15.9	22.7
10–12	43.0	49.1	42.5	31.7	41.7
>12	62.8	67.4	61.2	52.9	61.0
Religion					
Hindu	37.4	50.6	33.7	21.6	37.1
Muslim	31.4	33.8	24.4	22.4	29.7
Christian	51.9	61.9	53.6	36.2	66.0
Other	45.9	55.2	45.6	27.9	43.1
Type of home					
Marital	30.2	37.0	28.7	17.8	30.6
Natal	40.8	50.2	38.3	26.5	39.2
Other	39.3	53.5	33.4	28.0	37.0
Region of residence†					
Southern	63.4	62.2	62.4	41.9	66.1
Western	49.6	55.4	50.8	33.6	49.2
Northern	45.2	57.7	40.7	18.3	42.9
Central	19.2	33.2	15.7	9.4	17.3
Eastern	25.2	38.2	21.0	17.7	20.3
North–eastern	24.1	20.9	22.1	32.5	20.9
Urban–rural residence					
Urban	57.2	62.8	54.7	44.0	55.4
Rural	27.4	33.3	27.0	19.3	26.8
Household wealth quintile					
Richest	68.3	71.3	69.2	58.3	65.8
Richer	51.0	52.1	53.0	45.9	50.2
Middle	35.9	36.0	39.3	34.4	34.4
Poorer	20.5	21.3	24.2	20.8	17.9
Poorest	9.4	12.3	10.1	9.3	8.0
Household education (in yrs.)‡					
≤5	11.6	15.3	12.4	8.8	10.9
6–9	23.7	28.6	24.7	17.3	22.6
10–12	42.8	48.0	42.4	33.2	41.5
>12	60.6	66.4	58.7	48.0	58.3
Read newspaper/magazine					
Almost every day	64.7	70.1	62.0	52.1	62.8
≥once per week	50.0	57.1	47.8	36.6	48.2
<once per week	38.6	43.3	40.5	29.8	36.7
Never	23.4	29.3	23.3	15.4	23.0
Watched television					
Almost every day	48.4	54.4	45.6	33.9	48.3
≥once per week	27.8	36.4	25.8	20.5	26.2
<once per week	20.0	28.7	18.6	18.1	17.1
Never	13.1	19.8	12.1	9.9	11.9
Listened to radio					
Almost every day	53.1	58.2	51.0	33.6	53.3
≥once per week	47.0	56.6	45.0	27.5	44.8
<once per week	39.9	49.2	41.4	24.9	36.9
Never	35.1	43.6	32.6	22.1	34.6
Exposure to newspaper/TV/radio§					
Almost every day	48.0	54.2	45.1	33.8	47.8
≥once per week	24.9	32.6	23.7	18.9	23.1
Rarely/never	12.2	18.2	11.7	10.5	10.6
Interacted with health worker††					
Met, MH discussed	41.9	49.1	46.5	19.2	41.2
Met, MH not discussed	31.6	37.7	30.7	18.1	32.5
Did not meet	38.7	48.1	35.9	25.0	37.2

†For region composition, see Table 1. ‡Defined as highest educational attainment of any usual resident female member of the household aged 15 or older. §Woman either read newspaper/magazine, watched television or listened to the radio. ††Met with auxiliary nurse midwife, accredited social health activist, anganwadi worker, multipurpose worker or any other community health worker within three months prior to the survey. *Notes*: For all variables except woman's age, chi-square test found differences between categories to be significant at p<.001 among all women and within a caste, and differences within a category to be significant at p<.001 across castes. MH=menstrual hygiene.

or more times as high among women from scheduled castes (10% vs. 69%) and other backward classes women (8% vs. 66%).

As in the overall sample, daily exposure to at least one of the three forms of mass media was associated with a substantial increase in exclusive disposable absorbent use among all castes—with a three-fold increase from rarely/never exposed to daily exposure among young women from scheduled tribes (from 11% to 34%) and from general castes (from 18% to 54%), and even greater increases among women from scheduled tribes (from 12% to 45%) and other backward classes (from 11% to 48%). In regard to interaction with health workers, the findings for castes was generally similar to that for the overall sample: For subgroups other than scheduled tribes, exclusive use of disposable absorbents was highest among women who had met with a health worker in the previous three months and had discussed menstrual hygiene (41–49%), followed by those who had not met with a health worker (36–48%), and then those who had met with a health worker but had discussed menstrual hygiene (31–38%). For scheduled tribes, however, exclusive use was higher among young women who had not met with a health worker than among those who had, regardless of whether menstrual hygiene was discussed (25% vs. 18–19%).

Multivariate Findings

• *Independent association of predictor variables.* Our first model examined the independent association of the selected individual-, household- and community-level variables with exclusive use of disposable absorbents after adjusting for woman's age. All the included variables were found to be independently associated with the outcome variable (Table 3). Compared with young women from general castes, those from the other three castes had lower odds of exclusively using disposable absorbents (odds ratios, 0.6 each). Women's odds of exclusive use decreased with decreasing education: Compared with the most educated women, those with 10–12 years of schooling had 49% lower odds of exclusive use, and those with five or fewer years of schooling had 91% lower odds of the outcome (0.5 and 0.1, respectively). In addition, Christian women and those belonging to "other" religions were more likely than Hindu women to report exclusive use (1.9 and 1.7); Muslim women were less likely to report the outcome (0.8).

In regard to the household-level variables, young women living in their natal home or one designated as "other" had greater odds than those living in a marital home of using disposable absorbents exclusively (odds ratios, 1.9 each). Compared with women in the southern region, women in the other regions had lower odds of exclusive use (0.1–0.5); rural women were less likely than urban women to report exclusive use (0.3). Also, women's odds of exclusive disposable absorbent use decreased with decreasing household wealth: Compared with the richest women,

those in the next highest wealth quintile had about half the odds of exclusive use (0.5), while the poorest women had one-twentieth the odds of the outcome (0.05).

Limited exposure to newspaper, TV and radio was negatively associated with young women's exclusive disposable absorbent use: Compared with women who were exposed to media almost every day, those exposed at least once per week had 58% lower odds, and those exposed rarely or never had 83% lower odds, of exclusive use (odds ratios, 0.4 and 0.2, respectively). Finally, women who met with a health worker in the previous three months but did not discuss menstrual hygiene were less likely than those who met with a health worker and did discuss the subject to report consistent use of disposable absorbents (0.7); not having met with a health worker was not associated with the outcome.

• *Individual-level and behavioral model.* In Model 2, all but one of the included individual-level and behavioral measures were found to be associated with exclusive disposable absorbent use, and the relationships were largely the same as in the previous model. Exclusive use was negatively associated with being from castes other than general castes (odds ratios, 0.6–0.8), lower number of years of schooling (0.2–0.6) and being Muslim (0.9); the outcome was positively associated with being Christian or a member of other religions (2.7 and 1.7, respectively). In addition, limited exposure to media remained negatively associated with young women's exclusive disposable absorbent use, although the odds ratios were slightly higher than in the previous model (0.5 for exposed at least once per week and 0.3 for rarely or never). Interaction with a health worker, however, was not significant in this model.

• *Community- and household-level model.* In Model 3, all four community- and household-level variables measures were found to be associated with exclusive use of disposable absorbents, and the relationships were in the same direction as in the first model. Those residing in the natal home or in an "other" home had greater odds of exclusive use (odds ratios, 1.4 and 1.2, respectively) than did those living in the marital home. Compared with women in the southern region, women in the other regions had lower odds of exclusive use (0.2–0.6). Rural women were still less likely than urban women to report using disposable absorbents (0.7), and compared with the richest women, those living in increasingly poorer households had increasingly lower odds of the outcome (0.1–0.5).

• *Full model.* In our final model, which included all of the variables being considered, the relationships were largely the same as in previous models, although associations were attenuated for some variables, one lost significance and one regained significance. Being of a caste other than a general caste, having 12 or fewer years of schooling and being Hindu all remained negatively associated with exclusive use of disposable absorbents (odds ratios, 0.3–0.9), and being Christian or a member of an "other" religion was positively associated with the outcome (1.7 and 1.2, respectively). Limited exposure to media remained negatively associated with exclusive use, although the odds ratios were not as low as in Model 2 (0.9 for exposed at least once per week and 0.7 for rarely or never). Meeting with a health worker without having discussed menstrual hygiene regained the significance found in Model 1, although the odds ratio was not as low (0.9); not meeting with a health worker remained nonsignificant. Type of home, which had been significant in Models 1 and 3, lost significance. Region of residence retained significance, and the odds ratios were little

TABLE 3. Age-adjusted odds ratios (and 95% confidence intervals) from logistic regression analyses examining young women's likelihood of exclusive use of disposable methods for menstrual bloodstain prevention, by selected characteristics, according to model

Characteristic	Model 1	Model 2	Model 3	Model 4
Caste				
General (ref)	1.00	1.00	na	1.00
Scheduled	0.61 (0.60–0.63)**	0.75 (0.73–0.77)**	na	0.88 (0.85–0.91)**
Scheduled tribes	0.60 (0.58–0.62)**	0.64 (0.62–0.66)**	na	0.94 (0.90–0.97)*
Other backward classes	0.64 (0.62–0.65)**	0.75 (0.73–0.76)**	na	0.80 (0.78–0.82)**
Education (in yrs.)				
≤5	0.09 (0.08–0.09)**	0.15 (0.15–0.16)**	na	0.31 (0.30–0.32)**
6–9	0.22 (0.22–0.23)**	0.29 (0.28–0.30)**	na	0.50 (0.48–0.52)**
10–12	0.51 (0.50–0.52)**	0.56 (0.55–0.58)**	na	0.71 (0.69–0.73)**
>12 (ref)	1.00	1.00	na	1.00
Religion				
Hindu (ref)	1.00	1.00	na	1.00
Muslim	0.80 (0.78–0.82)**	0.92 (0.90–0.95)*	na	0.75 (0.73–0.77)**
Christian	1.93 (1.87–1.99)**	2.66 (2.55–2.77)**	na	1.68 (1.60–1.77)**
Other religions	1.74 (1.67–1.81)**	1.65 (1.57–1.72)**	na	1.22 (1.16–1.28)**
Exposure to newspaper/TV/radio†				
Almost every day (ref)	1.00	1.00	na	1.00
≥once per week	0.42 (0.41–0.43)**	0.49 (0.48–0.51)**	na	0.88 (0.85–0.91)**
Rarely/never	0.17 (0.16–0.17)**	0.27 (0.26–0.28)**	na	0.74 (0.72–0.77)**
Interacted with health worker‡				
Met, MH discussed (ref)	1.00	1.00	na	1.00
Met, MH not discussed	0.65 (0.60–0.71)**	0.93 (0.85–1.02)	na	0.86 (0.78–0.95)*
Did not meet	0.93 (0.86–1.01)	1.04 (0.95–1.14)	na	0.94 (0.85–1.03)
Type of home				
Marital (ref)	1.00	na	1.00	1.00
Natal	1.90 (1.85–1.94)**	na	1.39 (1.35–1.42)**	0.96 (0.93–0.99)
Other	1.91 (1.77–2.06)**	na	1.18 (1.08–1.29)**	1.03 (0.95–1.12)
Region of residence§				
Southern (ref)	1.00	na	1.00	1.00
Western	0.54 (0.52–0.56)**	na	0.57 (0.54–0.59)**	0.65 (0.62–0.68)**
Northern	0.45 (0.44–0.46)**	na	0.38 (0.37–0.40)**	0.47 (0.45–0.49)**
Central	0.14 (0.14–0.15)**	na	0.17 (0.16–0.18)**	0.21 (0.21–0.22)**
Eastern	0.18 (0.18–0.19)**	na	0.37 (0.35–0.38)**	0.41 (0.40–0.43)**
North-eastern	0.36 (0.34–0.37)**	na	0.50 (0.48–0.52)**	0.45 (0.43–0.47)**
Urban–rural residence				
Urban (ref)	1.00	na	1.00	1.00
Rural	0.32 (0.31–0.33)**	na	0.70 (0.68–0.72)**	0.66 (0.64–0.67)**
Household wealth quintile				
Richest (ref)	1.00	na	1.00	1.00
Richer	0.48 (0.47–0.49)**	na	0.46 (0.45–0.48)**	0.59 (0.57–0.61)**
Middle	0.26 (0.25–0.26)**	na	0.26 (0.26–0.27)**	0.40 (0.39–0.42)**
Poorer	0.12 (0.12–0.12)**	na	0.14 (0.14–0.15)**	0.27 (0.26–0.28)**
Poorest	0.05 (0.05–0.05)**	na	0.07 (0.07–0.08)**	0.18 (0.17–0.19)**

*p<.05. **p<.01. †Woman either read newspaper/magazine, watched television or listened to a radio. ‡Met with auxiliary nurse midwife, accredited social health activist, anganwadi worker, multipurpose worker or any other community health worker in three months prior to the survey. §For region composition, see Table 1.
Notes: ref=reference group. na=not applicable. MH=menstrual hygiene.

changed (0.2–0.7) compared with Models 1 and 3. Rural residence continued to be associated with lower odds of the outcome (0.7). Lastly, compared with the richest women, women in each of the lower wealth quintiles had lower odds of exclusive use (0.1–0.5), as found in Models 1 and 3.

DISCUSSION

The present analysis of nationally representative survey data found that fewer than 40% of women aged 15–24 in India reported using only disposable absorbents to prevent bloodstains during menstruation. The majority of young Indian women depend to some degree on reusable absorbents (including cloths, rags and other locally available materials) and, thus, may have an elevated risk of adverse health effects. Menstrual hygiene practices varied considerably by women's individual-, household- and community-level characteristics. Young women residing in rural areas and in regions other than southern India had reduced odds of using disposable absorbents exclusively. Poorer and less educated women were similarly disadvantaged, as were Muslim women and those of "other" religions.

Use of disposable absorbents may be higher in southern states as a result of greater resources, better infrastructure and elevated levels of female literacy, compared with other regions. A previous study found that schools in the southern state of Tamil Nadu have separate toilet and menstrual waste disposal facilities, whereas schools in Maharashtra (western) and Chhattisgarh (central) did not.[27] Rural adolescent girls have lower knowledge about menstruation and menstrual hygiene than their urban counterparts, which might affect their practices.[42,43] A recent systematic review of menstrual hygiene management in India observed higher use of commercial pads in urban areas and of cloths in rural areas.[5]

An important finding of this study is the notably low level of exclusive disposable absorbent use among young women from deprived castes. Less than a quarter of women from scheduled tribes reported exclusive use, compared with nearly half of the women from general castes. Caste identity is an important determinant of life opportunities and social inclusion/exclusion in Indian society. The country has several policies and programs that address deprivation of the oppressed and backward castes of lower social status, and improving menstrual hygiene could be a future priority. Previous small-scale studies have documented a considerable lack of knowledge of menstruation and its management among tribal women in different parts of India.[1,37–39] Kumar and Srivastava attributed the low use of sanitary napkins among adolescents in urban slums to a combination of such factors as limited access, financial cost and cultural practices that inhibit women from using disposable absorbents.[44] Our findings of the significance of education, household wealth and region support these explanations from earlier studies.

Our results revealing low overall use of disposable absorbents—and particularly low use among socioeconomically disadvantaged groups—call for the urgent need to develop strategies to address these vulnerabilities and inequities. Efforts should be made to promote hygienic menstrual management practices by improving awareness levels and by making access to disposable absorbents easier and more affordable. Regarding awareness, women need to be better informed about the adverse consequences to health and well-being of using nondisposable absorbents. Given our finding that use of disposable absorbents was lower among those who met with a health worker but did not discuss menstrual hygiene, interactions between women and frontline health workers should be strengthened to include and emphasize discussion of menstrual hygiene issues. Frontline health workers should encourage women during routine home visits to use disposable absorbents to reduce the risk of adverse reproductive health outcomes.

Our finding that women's lack of exposure to mass media resulted in lower use of disposable absorbents is in keeping with past research conducted in India that recognized the importance of mass media in expanding knowledge and use of disposable absorbents among adolescent girls in varied settings.[1,29,45,46] This growing consensus points to the need for strengthening current outreach efforts and developing new programs—ideally ones that target disadvantaged groups. Recent communication initiatives like the "18 to 82" campaign (which aims to bridge the gap between the 18% who use sanitary napkins and the 82% who engage in unhygienic practices) and Run4Nine (which aims to ensure that no woman or girl is left behind due to her biology) promote menstrual hygiene awareness and have endorsement from celebrities. Initiatives such as these need to be supported and expanded. Celebration of menstrual hygiene day is another encouraging effort toward improving menstrual health and awareness and should be expanded. Social marketing of sanitary napkins, similar to the approach used in increasing the outreach services for other reproductive health programs including family planning, could also promote disposable absorbent use among women.[47] It would be useful to promote this through existing platforms such as *Rashtriya Kishor Swasthya Karyakram*,§ which can promote menstrual hygiene programs along with adolescent reproductive and sexual health programs.[48]

In addition to informational outreach, resources should be allocated to making disposable absorbents more widely available. A study in Uttar Pradesh (the most populous Indian state) found that availability of commercial menstrual hygiene products remains extremely low.[49] The same study revealed that the majority of products available on

§The Ministry of Health and Family Welfare launched the *Rashtriya Kishor Swasthya Karyakram* (National Adolescent Health Program) in 2014. The program aims to improve nutrition and sexual and reproductive health; enhance mental health; and prevent injuries, violence and substance abuse among adolescents aged 10–19.

the market appear to be packs of fewer than 10 pads priced between 29 and 90 rupees (US$0.44–1.31), and products exceeding 32 rupees (US$0.47) per pack were often in low demand. One proposal would be to direct frontline health workers—including ANMs and ASHAs—to distribute sanitary napkins at subsidized cost. Improved access to sources of culturally appropriate disposable absorbents should help to increase use, particularly among women from regions and castes that may hold views that discourage hygienic practices.

Free distribution of sanitary napkins in schools may go a long way to promote disposable absorbent use and also may help reduce absenteeism among young female students during their periods.[50,51] Some Indian states have already initiated such efforts. The government of Maharashtra, for example, provides sanitary napkins to young women attending select schools at a cost of five rupees (US$0.07) and to rural women through the *Asmita Yojana* scheme at a cost of 24–29 rupees (US$0.35–0.40). Such efforts should be scaled up and implemented in a sustainable manner.

Marketing and distribution of low-cost sanitary napkins, particularly in rural India, has great potential.[52,53] Several programs are in place and address the issue, but irregular and inadequate financing and lack of involvement of ASHAs and other community stakeholders hamper existing programs. Involving multiple stakeholders and ensuring consistent supply of the product are keys to sustainability.

Another important strategy is to develop partnerships between the government and NGOs or groups involved in producing and promoting low-cost sanitary napkins. Some such initiatives have already begun. On International Women's Day in 2018, the Indian government launched the 100% oxy-biodegradable sanitary napkins "Suvidha" in packs of four, priced at 10 rupees (US$0.14) per pack, to be made available at *Jan Aushadhi Kendras* (pharmaceutical centers) registered under the *Pradhan Mantri Bhartiya Janaushadhi Pariyojana* campaign.[54] In August of 2019, the Government of India slashed by 60% the price of sanitary napkins sold at its Jan Aushadhi Kendras to just one rupee. Tens of millions of pads have been sold through this directive.[55] However, irregular and inadequate financing, and lack of involvement of ASHAs and other community stakeholders, hamper existing programs. Sustainability would be strengthened by involving multiple stakeholders and ensuring consistent supply of products.

Partnerships between the government and NGOs may also be important to create awareness about menstrual hygiene management, remove taboos and misconceptions, and promote low-cost sanitary napkins. For example, the Sustainable Menstruation Kerala Collective raises public awareness about menstrual hygiene; *Sacchi Saheli* organizes menstrual awareness sessions in urban slums and debunks common myths about menstruation; Eco Femme educates girls and women about menstruation, and manufactures washable and reusable cloth pads; the Red Cycle, *Nischay* and Code Red have been organizing activities to enhance awareness of effective menstrual hygiene management and challenge myths and misconceptions related to menstruation. In addition, Ammada Trust's "#GiveHer5" campaign provides sanitary napkins to rural girls in India; *Goonj* provides clean, cloth sanitary pads for women in villages; and Aakar Innovations provides biodegradable affordable pads to poor rural women. Our study's findings highlight the need to revisit and reprioritize these initiatives, and to consider allocating more funding to strengthen them.

Limitations

Our study has some limitations. First, the NFHS–4 lacks data on other potential determinants of disposable absorbent use, such as myths, traditional beliefs, perceived side effects and access to disposable absorbents. Second, respondents were not provided a time frame for the period in which they were to recount their use of various absorbents, potentially resulting in discrepancies in how respondents elected to answer the question. Third, the present study is unable to assess whether women used disposable absorbents in a hygienic manner. Fourth, the survey only provided data for absorbent use among women aged 15–24, thus excluding women older than 24, whose menstrual hygiene practices may differ from those of younger women.

CONCLUSIONS

Reusing products that prevent bloodstains from being evident during menstruation can lead to adverse health and well-being outcomes. This study is the first to use nationally representative data to measure exclusive use of disposable absorbents during menstruation among young women in India, and to identify demographic and socioeconomic correlates of such use. The study documents low levels of exclusive use of disposable absorbents and reveals associations between disempowerment in various forms and increased risk of non-hygienic menstrual practices. The findings suggest that interventions should be geared toward redressing these inequities through a combination of educational outreach and the dissemination and subsidizing of disposable sanitary napkins. Several such programs have begun in recent years, and these should be supported, expanded and broadened to target disadvantaged social groups, such as women from deprived castes. Frontline health workers should be directed to discuss menstrual hygiene during routine home visits. Promoting these and other interventions may improve menstrual knowledge and hygienic practices, reduce school absenteeism and drop out, and contribute to future economic and social empowerment of young women. The benefits may also contribute to achieving several Sustainable Development Goals (SDGs), including SDG 4 (inclusive and equitable quality education), SDG 5 (addressing gender equality) and SDG 6 (providing clean water and sanitation for all).

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RESUMEN

Contexto: *El uso higiénico de productos absorbentes durante la menstruación es un reto para las mujeres jóvenes en India, especialmente entre las carentes de privilegios que no tienen el conocimiento y el acceso a recursos. Reusar los productos absorbentes del flujo menstrual puede ser antihigiénico y derivar en resultados adversos para la salud y de otro tipo.*

Métodos: *Se utilizaron datos correspondientes a los años 2015–2016 de la Encuesta Nacional de Salud Familiar 4 de 233,606 mujeres menstruantes en edades de 15 a 24 años, para examinar niveles y correlatos del uso exclusivo de productos absorbentes desechables durante la menstruación. Se condujeron análisis de regresión bivariada y logística para identificar las disparidades en el uso exclusivo por características tales como la casta, la exposición a medios masivos y la interacción con trabajadores sanitarios.*

Resultados: *El uso exclusivo de productos absorbentes desechables fue bajo en mujeres jóvenes en general (37%) y varió sustancialmente en función de la casta y otras características. En comparación con mujeres de castas generales, aquellas pertenecientes a castas y tribus oficialmente reconocidas y otras clases en desventaja, tuvieron reducidas probabilidades de un uso exclusivo de productos absorbentes desechables (razón de probabilidades, 0.8–0.9). El uso de productos absorbentes desechables se asoció negativamente con más bajos niveles educativos y de riqueza familiar, así como con el hecho de residir en zonas rurales. En comparación con las mujeres que reportaron tener exposición diaria a los medios, aquellas con una exposición menos frecuente tuvieron probabilidades reducidas de usar productos absorbentes desechables (0.7–0.9). Entre aquellas que tuvieron contacto reciente con un trabajador sanitario las probabilidades de uso exclusivo fueron menores si la higiene menstrual no había sido abordada durante la consulta (0.9).*

Conclusiones: *Debe procurarse la promoción de la conciencia acerca de una apropiada higiene menstrual –a través de la educación, las campañas de medios y las conversaciones con trabajadores de la salud reproductiva– así como las intervenciones para diseminar y subsidiar la compra de toallas sanitarias desechables con el fin de hacer frente a las disparidades en salud.*

RÉSUMÉ

Contexte: *L'utilisation hygiénique de produits absorbants pendant la menstruation pose un défi aux jeunes femmes d'Inde, en particulier celles défavorisées, qui manquent d'information et d'accès aux ressources. La réutilisation d'absorbants menstruels peut être contraire à l'hygiène et donner lieu à des résultats de santé et autres défavorables.*

Méthodes: *Les données de l'Enquête nationale 2015–2016 sur la santé familiale–4 relatives à 233 606 femmes réglées âgées de 15 à 24 ans ont servi à examiner les niveaux et les corrélats de l'utilisation exclusive d'absorbants jetables pendant la menstruation. Les disparités en ont été identifiées par analyses de régression logistique et bivariée en fonction de caractéristiques telles que la caste, l'exposition aux médias et l'interaction avec les agents de santé.*

Résultats: *L'utilisation exclusive d'absorbants jetables s'est révélée faible parmi les jeunes femmes dans leur ensemble (37%), avec une variation nette suivant la caste et d'autres caractéristiques. Par rapport aux femmes des castes générales, celles des castes et tribus répertoriées et des autres classes inférieures présentaient une probabilité réduite d'utilisation exclusive d'absorbants jetables (RC, 0,8–0,9). L'utilisation d'absorbants jetables était associée négativement aux niveaux d'éducation et de richesse du ménage inférieurs, ainsi qu'à la résidence en milieu rural. Par rapport aux femmes ayant fait état d'une exposition journalière aux médias, celles qui y étaient exposées moins fréquemment étaient moins susceptibles d'utiliser des produits absorbants jetables (0,7–0,9). Parmi celles qui s'étaient entretenues récemment avec un agent de santé, la probabilité d'utilisation était moindre si la question de l'hygiène menstruelle n'avait pas été abordée (0,9).*

Conclusions: *La promotion de la sensibilisation à une bonne hygiène menstruelle – par l'éducation, les campagnes médiatiques et la discussion avec les agents de santé reproductive – et des interventions de dissémination et de subvention de l'achat de serviettes hygiéniques jetables doivent être poursuivies pour éliminer les disparités sanitaires.*

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