Menstruation Awareness, Beliefs and Taboos: A Study of Gujarat (India)

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ABSTRACT

Menstruation is an integral yet neglected aspect of a woman's health. The reasons for this neglect could be because of the beliefs and taboos associated

with it. This study examines the awareness and beliefs about menstruation and taboos practiced during the menstrual cycles. This study focuses on girls and women from different socioeconomic backgrounds in Gujarat, India. The data are collected by administering a questionnaire. Simple linear regression is undertaken to examine the influence of socioeconomic factors on awareness, beliefs, and taboos. The results reveal that education, region (rural and urban), and the extent of development of the district (developed, developing, tribal) are the main factors that influence the awareness, beliefs, and taboos associated with menstruation. However, occupation influences awareness, marital status, and family type influence beliefs, whereas age and religion influence taboos.

INTRODUCTION

Menstruation management is important for females for reproductive and overall health. However, discussing menstruation is considered taboo across cultures and geographical regions. Menstruation is associated with shame, fear, and agony. The taboos, beliefs, and inhibitions associated with menstruation have led to many unhygienic practices. This harms reproductive health in particular and, thus, overall health. Mahon and Fernandes (2010) observed that women use reusable clothes (torn from used Saris) in India, Nepal, and Bangladesh in order to get the menstrual blood absorbed. Some tribes in India wear a flared petticoat and use the flair (pleated and tucked) to absorb the menstrual blood.

Menstruation is a natural phenomenon in which inner linings of the uterus, along with blood, flows out of the body every 28 days. The onset of menstruation is an indicator of puberty amongst females and is known as menarche. Since the onset of menarche, normal menstrual cycle bleeding occurs for 3 to 7 days every month until menopause. Problems associated with menstruation are not limited to gynaecological problems, but most problems are due to ignorance about the process, beliefs, and taboos. This lack of awareness about menstruation and ignorance about it results in inadequate and improper care and cleanliness. Poor menstrual hygiene is directly related to illnesses associated with urinary tract and reproductive tract infections (Dasgupta et al., 2019). Thus, awareness about menstrual health and hygiene issues is necessary for its own sake as well as for guiding the adolescent girls in the family and neighborhood. Therefore, it is important to deal with inhibitions to discuss health-related issues, more specifically, menstrual health issues.

Initiation of menstruation is linked to women's entry into the reproduction age; however, prevailing traditions and cultural practices make this transition seem scary and difficult (Dhingra et al., 2009). Many girls/women are found to have little information and misconceptions about the physiological changes at menarche. Most of this information is acquired from their mothers, friends, and teachers. Theses information influences girls' emotional state, mentality, lifestyle, and most importantly, health. Education, age, region (rural/urban) etc. have a bearing on a girl/woman's knowledge and understanding of menstruation issues as well as in their beliefs and behavior (Alharbi et al., 2018). It is often found that menstruating girls are not aware of the biological reasons associated with menstruation, and this has been documented by Sreenivasa et al. (2017).

The lack of awareness on the causes of menstruation, irregularities in menstruation, and the importance of hygiene of private body parts affect women's health status. A study undertaken by the District Level Household and Facility Survey (DLHS) (2010), using data collected during 2008-09, shows that more than 17% of women have menstruation-related problems. This study was undertaken in Gujarat, a western coastal state of India. The percentage of women having menstruation-related problems increases with age. The percentage of women in the 25-35 age group who do not menstruate is 8.2%. The data on socioeconomic indicators are collected for these women who have problems with menstruation. There is a little gap between the percentage of rural and urban women who have problems with menstruation. The percentage of women having problems with menstruation is high among those with education less than five years (21%) and illiterate women (20.1%). Data on husband's education is also collected, and women who have a less educated or illiterate husband have more menstrual problems. Muslim women have the highest percentage of menstrual problems (21.8%), and Jains have the lowest (13.6%). The percentage of women with these problems is highest among scheduled castes (21.5%), though women belonging to a scheduled tribe and other backward classes having these problems are not very low (20.1% and 19%, respectively). Other socioeconomic variables like income index, age at the consummation of marriage, and duration of marriage do not seem to exhibit any pattern on the percentage of women with these problems, as per the said study. The menstrual problems on which data are collected include no periods, painful periods, frequent or short periods, irregular periods, prolonged bleeding, scanty bleeding, intermenstrual bleeding, and blood clots or excessive bleeding. The cohort surveyed and was found to have menstruation-related problems comprised of 3597 women. Among the problems listed by the DLHS (2010), the painful period was the most prominent, and

67.9% of women in Gujarat reported.

Good research in any discipline enhances our understanding of issues to suggest measures to improve people's overall well-being and welfare, and social science research is not an exception. The present study focuses on getting insights into the issues associated with menstrual management and hygiene. Little research is undertaken on issues of menstrual hygiene from the social science perspective.

OBJECTIVES OF THE STUDY

The study aimed to address the following objectives, (1) to examine the awareness about menstruation among women from a cross-section of socioeconomic strata, (2) to elicit the prevailing beliefs and taboos associated with menstruation among women and society, and (3) to examine whether socioeconomic factors like education, income, occupation, religion, marital status, and region and development status of the district.

METHODOLOGY

Research Design
This study employs a cross-sectional, descriptive research design to examine the objectives. The data are collected using a mix of self-administered and investigators' administered questionnaires over online, telephonic, and offline modes. These questionnaires are administered to women aged 14-49 years in selected districts of Gujarat state in India.

The design is descriptive as it focuses on getting insights into women's awareness about menstruation and social beliefs and taboos associated with it. Details on various socioeconomic characteristics of the sample were sought through the said survey questionnaires, which were used to get insights into the influence of these characteristics on awareness, beliefs, and taboos. It is cross-sectional because the survey was conducted for only one period, from April to August 2020.

Research Site
A total of 1050 women from various districts across the Gujarat state of India were sampled for collecting data. The women belonged to the age range of 14-49 years, and the first stage of stratification was developed, developing districts, and tribal districts. Women belonging to the strip from Valsad in

extreme South to Ahmedabad in the extreme north of Gujarat were approached for the data collection. Within each category of these districts, rural and urban areas were sampled, from which women with different educational backgrounds and a cross-section of income-group were selected.

Instrumentation

A questionnaire is developed and administered to women across different parts of Gujarat. The questionnaire is designed to include questions on (1) awareness, beliefs, and taboos, (2) practices during menstruation, and (3) costs of menstrual hygiene (or otherwise). The questionnaire is organized into nine modules; the first module is designed to capture the socioeconomic profile of the respondents' Modules 2 to 4 of the questionnaire asks the respondents to choose among the multiple-choice responses on awareness, beliefs, and taboos. The fifth module asks the respondents to give responses on the hygiene practices adopted by them during menstruation. The sixth module tries to seek information on the direct costs associated with hygiene practices. Module 7 seeks information on explicit, indirect costs associated with menstrual and pre-menstrual syndromes and on implicit costs of taboos. Module 8 seeks information on implicit costs of hygiene practices. Finally, module 9 asks questions to get insights into the opportunity costs of absenteeism during menstrual cycles. In this paper, however, the attempt is to present the insights derived from modules 2 to 4, that is, on awareness, beliefs and taboos, and their association with relevant socioeconomic variables. The process of developing this questionnaire began with discussions with women doctors and gynecologists. The draft questionnaire was then discussed for adequacy of different issues of menstruation with working and non-working women. The questionnaire was then pilot tested. At each stage, the suggestions and feedback were incorporated to make the questionnaire as in-depth as possible. The questionnaire responses were then triangulated with the responses from FGDs.

The questionnaire is administered both using online mode as well as face-to-face mode. Also, the questionnaires are administered by the respondent themselves (self-administered) as well as by trained field investigators. The questionnaire is designed to get a broad understanding of menstruation issues and examine whether any differences are observed across socioeconomic groups/demographic characteristics. A sample of 1050 girls/women across different districts of Gujarat is collected using a mix of respondent-driven sampling (RDS) and multi-stage stratified sampling. The online self-administered questionnaires'

link is sent via WhatsApp, which employed RDS, whereas the questionnaires administered by trained field investigators employed multi-stage stratified sampling. The stratification is done on developing versus developing districts, regions (rural-urban), age-group, and income-group. The sample size from the developed/developing districts versus rural/urban is given in Table 1.

Table 1. Sampling distribution across Extent of Development of a District and Region

Regions	Rural	Urban
Developed	260	427
Developing	91	103
Tribal	116	21
Unclassified	5	2

The ratio of self-administered to field investigators administered questionnaire was 30:70.

After data cleaning, 1025 responses were retained, and 25 responses had to be discarded because of incomplete/inconsistent responses or samples outside the sampling frame (for example, some responses of the self-administered questionnaire were received from Bangalore and Pune, whereas the sampling frame included girls/women of Gujarat state only). The reason for getting responses, outside the sampling frame, through a self-administered questionnaire was partly because of the RDS approach, which constitutes the limitation of the RDS approach.

Multi-response frequencies and percentages are used to describe the data. Simple linear regression using the ordinary least squares (OLS) method is used to examine the impact of different socioeconomic and demographic indicators on awareness, beliefs, and taboos. OLS is one of the commonly used regression methods because of its computational simplicity. However, it requires some assumptions like the linearity of parameters, normal distribution of the dependent variable, and absence of multicollinearity and heteroscedasticity for the OLS estimators to be unbiased. While OLS is largely robust to the heteroscedasticity assumption, the normal distribution of the awareness, beliefs, and taboos scores is ensured before applying OLS. The absence of multicollinearity is also ensured. In this paper, the discussion is confined only to awareness, beliefs, taboos, and usage patterns.

RESULTS AND DISCUSSION

Socioeconomic Factors' Influence on Awareness, Beliefs, and Taboos

This section presents the results obtained by analyzing the responses received from the respondents. Three different scores for (1) awareness, (2) beliefs, and (3) taboos are generated, and these scores are regressed against the socioeconomic factors: age, education level, occupation (nature of work), marital status, religion, region, and the development status of the district.

Menstruation Awareness

Literature on menstruation awareness among women shows a mixed pattern: Women seem to be aware in some regions of India, whereas, in other regions, women are found to have less awareness. Patel and Patel (2016) examined the practices among the 203 girls-students of MBBS (under-graduate) program at the Gujarat Medical Education and Research Society (GMERS) located in Valsad (Gujarat, India). They found that the girls were aware of the duration of the menstrual cycle, and they knew about menstruation well before their menarche. Santra (2017) undertook a study in the Baghbazar slum, an urban slum of Kolkata (West Bengal, India), on 160 women of reproductive age (15 to 45 years) and found similar results. Sreenivasa et al. (2017) examined the awareness regarding menstruation among the 400 adolescent school girls from 5 schools of Bangalore Medical College and Research Institute (BMCRI). The girls were found to have good awareness about menstruation (as a biological process), the approximate age of attaining menarche, and the duration of menstruation. Chadalawada and Kala (2016) examined menstrual hygiene practices among 150 girls of a secondary school in the rural Vijaywada, the field practice area of Siddhartha Medical College. They found that a majority of the girls have awareness about menstruation prior to their onset of menarche. Thakur et al., 2014) examined the menstrual hygiene awareness among 192 (96 adult & 96 adolescent) women belonging to a low socioeconomic community of the Bombay Development Department, chawls in Mumbai and found that relatively fewer girls in the age group of 15 to 24 years had information about menstruation before their menarche, but that was not adequate. Srinivasa and Manasa (2017) undertook a study on 486 school-going girls studying in 8th to 12th standard of one of the Government Girls High School in Bengaluru and found that only 31.06 percent of girls had awareness about menstruation before menarche. Prajapati and Patel (2015) undertook a study on examining the menstrual hygiene awareness

among adolescent girls on 88 adolescent girls, who are enrolled in the seven different Anganwadi centers (AWCs) under the 24 Urban Health Training Centres (UHTC) of Gujarat Medical & Education Research Society (GMERS) Medical College, Gandhinagar. Only 39.8 percent of girls had information about menstruation before their menarche and the source of information about menstrual cycles, and only 17 percent of girls had correct information on the source of menstrual blood. Some girls had a misconception that menstrual blood contains toxic substances.

This study conducted an in-depth inquiry into awareness associated with physical changes, hormonal and associated changes, which is the major contribution of this study to the existing literature on menstruation awareness. The details of awareness about the changes at, and prior to, menarche are given in Table 2.

Table 2. Bodily Changes and Menstruation Awareness

Awareness Parameters	Frequency	Percentage
Breast Development	839	81.85
Growth of Pubic Hair	813	79.32
Growth of Armpit Hair	812	79.22
Overall Physical Changes	783	76.40
Hormonal Changes	660	64.39
Mood Changes	669	65.27
Body Ready for Reproduction	499	48.68
Realization of Medical Conditions	264	25.76
Source of Menstrual blood	488	47.61
Normal gap between two cycles	573	55.9

One can see from Table 2 that more than 75% of respondents were aware of physical changes that take place at menarche; around 65% are aware of hormonal and mood changes. However, less than 50% are aware that the body is getting prepared for reproduction whereas, only 25% are aware that a medical condition like endometriosis, Polycystic Ovarian Disorder (PCOD), etc., could be diagnosed at menarche or soon after that.

To examine the impact of socioeconomic factors on menstruation awareness, an awareness score is developed. The awareness score is generated by summing up the number of *"Yes"* responses for each aspect of awareness. Thus, the maximum

score of awareness is 10, and the minimum is zero. The awareness score is regressed against the socioeconomic factors. Awareness score is then regressed against the relevant socioeconomic factors[1]. The results of the regression are given in Table 3.

Table 3. Impact of Socioeconomic Factors on Menstruation Awareness

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	6.6028	0.1852	35.646	2e-16
Education: Illiterate	-1.6055	0.6137	-2.616	0.00903
Education: Literate	-1.2833	0.4289	-2.992	0.00284
Education: Up to 12th Grade	-0.4519	0.2294	-1.970	0.04915
Education: Up to Primary	-0.4309	0.3468	-1.242	0.21438
Education: Up to Secondary	-0.6868	0.2654	-2.588	0.00980
Occupation: Manual Labor (Outdoors)	-0.2180	0.3782	-0.576	0.56455
Occupation: Non-Working	-1.6783	0.2237	-7.502	1.37e-13
Occupation: Other work (Outdoors)	0.5239	0.2151	2.436	0.01503
Occupation: School-going student	-0.9281	0.3760	-2.469	0.1373
Occupation: Working (Indoors)	-0.6832	0.2149	-3.179	0.00152
Region: Urban	1.0355	0.1613	6.419	2.11e-10
Development Status: Developing	-0.6839	0.1876	-4.604	4.67e-06
Development Status: Tribal	-0.3969	0.2362	-1.680	0.09327
Development Status: Undefined	-2.0754	0.8696	-2.387	0.01719

Residual standard error: 2.272 on 1010 degrees of freedom

Multiple R-squared: 0.2441, Adjusted R-squared: 0.2336

F-statistic: 23.3 on 14 and 1010 DF, p-value: < 2.2e-16

The F-statistic and the associated p-value shows that the model is statistically significant. While the adjusted r-square is 0.2336, the objective of this regression is to examine the impact influence of different socioeconomic factors, holding

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[1] For categorical predictors like education, occupation, region, development status, etc., the coefficients are interpreted in the context of a reference category. In categorical predictors, the coefficients will be calculated for all the categories, except the reference category. In Table 3, the reference category of education is "higher education," for occupation, it is "college-going girls," for the region, it is "rural," and for development status, it is "developed." These reference categories remain the same across all the regressions used in this paper. In the case of additional predictors, the reference categories are given in the footnotes of the respective regressions.

for the rest.

The results in Table 3 show that education influences awareness; higher education is associated with higher awareness. This can be seen from the negative and statistically significant coefficients for all the categories of education, except primary education. The coefficient of primary education is also negative but not statistically significant.

Occupation also influences awareness scores. All the coefficients of different occupation categories are negative and statistically significant, except for manual labor (outdoors) that has a negative but statistically insignificant coefficient. Thus, it can be inferred that in comparison with college-going students, the respondents in all other categories have relatively lower awareness.

Urban girls/women have clearly higher awareness about menstruation and menstrual hygiene compared to rural girls/women, as can be seen from the positive and statistically significant coefficient of the urban region. Also, the negative and statistically significant coefficients of the categories of the development status of the districts reveal that the awareness in developed districts is clearly higher compared to developing and tribal districts.

Thus, there is a positive relationship between awareness and education level. The girls/women who are currently studying in higher education institutions have higher awareness than women in other occupations, including school-going girls. Awareness is found to be different across different occupations. Urban girls/women have higher awareness than rural girls/women. The awareness is higher in the girls/women from developed districts than those from developing and tribal districts.

Kotian et al., (2017) find that the information is highest for the girls/women belonging to middle-income households, though high-income households lagged only slightly behind in terms of knowledge on menstruation. They undertook the study on a sample of 110 women visiting the Lady Goschen Hospital and the KMC Hospital both in Mangalore (Karnataka, India). The results further revealed that women/girls aged 15-35 years are better informed than those belonging to higher age groups. The present study does not show any association of age or income with menstruation awareness.

Chajhlana et al. (2019) examined the menstrual hygiene practices among 69 school-going adolescent girls aged 13 to 16 years in the urban areas of Hyderabad. The results show that awareness is better among daughters of a literate mother compared to an illiterate mother. Also, the daughters of working mothers show better awareness compared to the non-working mothers. Thus, the

educational and working status of the mother also seems to influence awareness about menstruation. Patavegar et al., (2014) undertook a cross-sectional study on 440 adolescent school-going girls of the government schools in the field practice area of the Urban Health Training Centre at Pulpralhadpur, New Delhi. They, too, find that awareness was found higher among girls whose mother's education was higher than in high school. Mahajan and Kaushal (2017) examined the awareness about menstrual hygiene among adolescent girls of the Government Girls Senior Secondary School, Shimla, Himachal Pradesh, and found that education of mothers had an association with the level of awareness. However, in this study, a majority of girls were found to have inadequate awareness about menstrual hygiene.

Anusree et al. (2014) also examined the extent of awareness about menstrual hygiene on a sample of 60 girls studying in standard 7th, 8th, and 9th studying in a Girls' school of Mangalore were selected for the study. The results of their study reveal that more than 50 percent of adolescent girls did not have adequate awareness about menstrual hygiene. Mothers' occupation was found to have an association with the score of menstrual hygiene awareness. A similar study was undertaken in Nepal by Ghimire (2017) examined 100 girls studying in standard 7th, 8th, and 9th in two schools of Dharan in Nepal. She obtained similar results as of (Anusree et al., 2014) that fewer girls were aware of menstrual hygiene and mothers' occupation associated with the said awareness.

Thus, apart from the socioeconomic factors influencing menstrual awareness, literature shows that mother's education and occupations play an important role.

Beliefs about Menstruation

Das (2008) provides an insightful description of different beliefs associated with menstruating women in Simlitola, Assam. The discussion in the study reveals that the village people of Simlitola believe that menstruation is impure, and that is because the blood coming out of the woman's body is dirty or wasteful. They, therefore, believe that if a menstruating woman touches anything, it becomes impure, and thus menstruation is labelled as "a pollutant." They believe that impurity stays with women for the entire menstruating period. This could be true of most communities and religions across India, as could be found from Garg et al., (2001), who attempt to understand the experience of menstruation in the socio-cultural context of an urban slum of Delhi and whether the behavior and beliefs in relation to menstruation change on moving from a rural setting to an urban slum. There could be rural-urban differences as well as across education

levels, especially of mothers, on the beliefs associated with menstruation, though taboos are largely deep routed in the societies.

The beliefs model examines the impact of socioeconomic background on beliefs associated with menstruation. In this study, eight different beliefs associated with menstruation are listed, and the respondents were asked to rate on a five-point balanced, Likert-type scale. Different beliefs on which the respondents are asked to rate on the five-point scale ranging from strongly believe to strongly disbelieve are:

- Menstruation is a disease.
- Menstruation is impious.
- The absence of menstrual cycles is pregnancy.
- Menstrual blood contains dangerous substances.
- Pain during menstruation indicates sickness.
- Irregularity in menstrual cycles is a disease.
- Regularity in menstrual cycles but shorter than 28 days is a disease.
- Regularity in menstrual cycles but longer than 28 days is a disease.

The belief score is developed by taking a mean of the z-score of the responses across belief measures. Belief score is developed and regressed against the factors defining the socioeconomic background of the respondents[2]. The results of the regression are given in Table 4.

Table 4. Beliefs Model: Impact of Socioeconomic Factors on Beliefs Associated with Menstruation

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.047909	0.0425709	-0.958	0.33820
Age	0.0014938	0.0009178	1.628	0.10391
Education: Illiterate	-0.2513771	0.0450039	-5.586	2.99e-08
Education: Literate	-0.0520457	0.0316999	-1.642	0.10094
Education: Up to 12th Grade	-0.0105541	0.0166527	-0.634	0.52637
Education: Up to Primary	-0.1377765	0.0248798	-5.538	3.91e-08

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[2] Here, age is a continuous variable and hence does not require any reference category. The reference categories for marital status and family type are "currently married" and "extended family," respectively. The reference category for education continues to be "higher education."

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
Education: Up to Secondary	-0.0929897	0.0178059	-5.222	2.14e-07
Marital Status: Ever married (Married but currently not with the husband)	-0.0669419	0.0350194	-1.912	0.05621
Marital: Status Never married	-0.0326530	0.0153405	-2.129	0.03353
Family type: Joint	0.0289266	0.0300694	0.962	0.33628
Family type: Nuclear	0.0552946	0.0303170	1.824	0.06847
Region Urban	0.0117149	0.0118126	0.992	0.32157
Development Status: Developing	0.0361237	0.0138954	2.600	0.00947
Development Status: Tribal	-0.0875690	0.0169901	-5.154	3.06e-07
Development Status: Undefined	0.1140208	0.0647555	1.761	0.07858
Residual standard error: 0.1686 on 1010 degrees of freedom				
Multiple R-squared: 0.1692, Adjusted R-squared: 0.1577				
F-statistic: 14.7 on 14 and 1010 DF, p-value: < 2.2e-16				

The F-statistic and the associated p-value in Table 4 show that the model is statistically significant. Here too, the adjusted r-square is 0.1577, but the objective of this model is only to examine the influence of socioeconomic factors on beliefs score. A lower belief score indicates stronger beliefs, and a higher score indicates loose or no beliefs. One can see that age does not influence belief scores because the coefficient of age is statistically not significant.

All the coefficients of education are negative. However, the categories illiterate, literate, and those with education up to secondary have statistically significant coefficients. Thus, it can be inferred that those who have attained higher education have higher belief scores. Thus, they have milder beliefs. Thus, education helps one have a better understanding of the menstruation process and thus, frees one from the beliefs associated with it.

The belief score of those who are either never married or those who are married but not currently living with their husbands (that is, single women/girls) has a lower and statistically significant belief score than those who are currently married. This indicates that single women have stronger beliefs compared to married women.

The coefficient of the urban region is not statistically significant. This means that there is no difference in intensity of beliefs among the rural and urban girls/ women.

Nuclear families have a positive and statistically significant coefficient, albeit at a 10% level of significance. The coefficient of joint families is not statistically significant. Thus, it can be inferred that girls/women in joint and extended families have stronger beliefs compared to those in nuclear families.

The coefficients of developing and tribal districts are positive and statistically significant. This means that girls/women in developing and tribal districts have stronger beliefs compared to those in developed districts.

In a nutshell, the results reveal that with an increase in education, the beliefs get milder. The intensity of beliefs is the same across rural and urban women. Married women hold milder beliefs than single girls/women. Girls/women in nuclear families hold milder beliefs compared to those in joint or extended families, and the girls/women from developed districts hold milder beliefs compared to the developing and tribal districts.

Menstruation Taboos

One of the oldest studies is by Montgomery (1974), who examines various dimensions of taboos observed during menstruation. Her ethnographic study covers forty-four different societies to examine various beliefs and taboos for women during menstruation, which are, Menstruating women should not, (1) have sexual intercourse and should restrict her movements, (2) touch personal belongings of men, weapons, instruments used in agriculture and fishing, craft tools, certain crops termed as "men's crops," religious emblems and shrines, hams, or flowers, and (3) cook for men and should be confined to separate huts.

Menstrual fluid is unpleasant, contaminating, and dangerous. Das (2008) identifies the taboos observed by the people of Simlitola, which include: (1) the girl/woman should be confined to her bed, she is not allowed to touch anything, and once she passes the route to go to the toilet, the route is sprinkled with holy water. Young girls are not allowed to go to school. They girls/women are not allowed to enter the kitchen or cook. The utensils in which she eats are washed in the backyard. Married women are not allowed to sleep with their husbands. The men do not seem to have any role in supporting the women during their menstruation period.

Kumar and Srivastava (2011) examined the prevalent social and cultural practices associated with menstruation across religions, socioeconomic background, and education regarding menstruation by conducting a survey on 117 adolescent girls and 41 mothers from residential colonies and slums in the urban area of Ranchi, Jharkhand. The commonest taboos include abstaining from religious practices, visiting places of worship, and touching pickles during

menstruation. The mothers explained that because the body emits a foul smell during menstruation, preserved food turns bad. Other taboos are largely guided by religion, caste, community, and age-old family beliefs. The findings also show that girls have become sensitive and aware of their health, and therefore, show a positive change in the outlook about the menstruation process. The economic status of the family is found to have a direct influence on menstrual practices.

Deo and Ghattargi (2005) examined the perceptions and practices regarding taboos associated with menstruation in the urban and rural field practice area of Swami Ramanand Teerth Rural Medical College Ambajogai, Beed, Maharashtra, by administering a structured questionnaire on 168 adolescent schoolgirls, 94 urban schools plus 74 rural, who had attained menarche. The results of the study show that the number of girls not practicing any taboo was significantly more among rural girls compared to urban girls. The authors do not explain this finding, which seems to contradict other studies and general observations. Normally, it is seen that girls in urban areas practice lesser taboos as compared to those in rural areas. The study further found that the girls observed restrictions were on the type of clothing, though there is no detailed discussion on the nature of clothing to be avoided during the menstrual cycles. Other restrictions include interaction with boys, physical activities and traveling in general, or traveling alone. Mahon and Fernandes (2010) tried to answer some questions associated with beliefs and taboos while examining why menstrual hygiene is not a part of the Water, Sanitation, and Hygiene (WASH) initiative. The study was undertaken using a structured questionnaire and in-depth interviews with a randomly selected sample of 2579 (686 students and 1893 adults not attending the school) girls and women. The study was administered in both rural and urban areas of Nepal and West Bengal, India. The major highlights in the context of taboos examined are attending religious functions, attending schools, cooking, doing household chores, touching males, playing, refraining from eating certain foods, and sleeping separately.

In the present study, ten different taboos associated with menstruation are listed and the respondents were asked to rate on a three-point scale. The taboos for which the respondents are asked to rate on the three-point scale – "Can't do", "Can do but I don't", and "Can do and I do" are: Attend religious ceremonies, perform religious ceremonies, offer prayers, go to the place of worship, do household work, cook food, touch stored food, live a routine; life, sleep on the usual bed, play outdoors/go to work, dance, and do work involving physical strain.

Taboos score is developed by taking the mean of the z-scores of the responses received for different taboos. A higher taboos score indicates milder taboos, and a lower score indicates stricter taboos. The taboo score is then regressed against the factors defining the socioeconomic background of the respondents[3]. The results of the regression are given in Table 5.

Table 5. Taboos Model: Impact of Socioeconomic Factors on Taboos Associated with Menstruation

Coefficients	Estimate	Std. Error	t value	Pr(>| t |)
(Intercept)	0.0430153	0.0552272	0.779	0.43623
Age	0.0023557	0.0007601	3.099	0.00199
Education: Illiterate	-0.2665177	0.0513938	-5.186	2.60e-07
Education: Literate	-0.0373035	0.0360661	-1.034	0.30124
Education: Up to 12th Grade	-0.0491048	0.0189947	-2.585	0.00987
Education: Up to Primary	-0.1255001	0.0283103	-4.433	1.03e-05
Education: Up to Secondary	-0.1209002	0.0201695	-5.994	2.85e-05
Family type: Joint	0.285593	0.0344568	0.829	0.40739
Family type: Nuclear	0.0701960	0.0346994	2.023	0.04334
Region Urban	0.0655778	0.0136377	4.809	1.75e-06
Development Status: Developing	0.0307154	0.0160797	1.910	0.05639
Development Status: Tribal	0.0395919	0.0195425	2.026	0.04303
Development Status: Undefined	-0.199493	0.0740760	0.269	0.78775
Religion: Hindu	-0.1581568	0.0383424	-4.125	4.02e-05
Religion: Jain	-0.4540509	0.0472627	-9.607	<2e-16
Religion: Muslim	-0.1766292	0.0554436	-3.186	0.00149
Religion: Parsi	-0.1784836	0.1417960	-1.259	0.20842
Religion: Sikh	-0.0523159	0.1423375	-0.368	0.71329
Residual standard error: 0.1929 on 1007 degrees of freedom				
Multiple R-squared: 0.21, Adjusted R-squared: 0.1967				
F-statistic: 15.75 on 17 and 1007 DF, p-value: < 2.2e-16				

The F-statistic and the associated p-value in Table 5 show that the model is statistically significant. Here too, the adjusted R-square is 0.1975, but the

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[3] The reference category for Religion is "Christians". The reference categories for the rest of the variables are the same as for the regressions of Table 3 and Table 4.

objective of this model is only to examine the influence of socioeconomic factors on taboos score. The positive and statistically significant coefficient of age reveals that taboos tend to get milder with age.

The coefficients of different categories of education are negative and statistically significant, except for those who are just literate (with or without schooling). This indicates that the intensity of taboos gets stricter with education. This is contrary to the logic since education liberates an individual from practices that appear to be illogical. Moreover, the results of beliefs show that an increase in education makes the beliefs milder. Thus, this result requires to be explored further.

The coefficient of taboos for women in a joint family is not statistically significant, whereas those in a nuclear family have a positive and statistically significant coefficient. Thus, women in joint and extended families observe milder taboos compared to those in nuclear families.

The coefficient of taboos in urban areas is positive and statistically significant. This indicates that urban girls/women have milder taboos compared the rural ones. The coefficients of taboos score for those living in developing and tribal districts is higher and statistically significant. Thus, those living in developing and tribal districts have milder taboos compared to the developed ones.

The taboos score of Hindu, Jain, Muslim respondents have a negative coefficient and is statistically significant. The coefficients of taboos for Parsis and Sikhs are not statistically significant. Thus, Hindus, Jains, and Muslims seem to observe stricter taboos compared to Christians, Parsis, and Sikhs.

The regression results reveal that the practice of taboos appears to get milder with age—an increase in the level of education results in the lesser practice of taboos. The girls/women practices from joint and extended families practice lesser and milder taboos compared to those from nuclear families. The practices of taboos by the girls/women in urban areas are lesser and smilder than those from rural areas, and those living in developing or tribal districts practice milder taboos. Christians, Parsis, and Sikhs observe milder taboos compared to Hindus, Muslims, and Jains.

CONCLUSIONS

A woman experiences menstruation every 28 days for nearly two-thirds of her life. Despite menstruation being a routine for women and a precondition for conceiving, it is stigmatized for being bad and impious across societies and

geographical areas. The beliefs and taboos associated with menstruation result in poor awareness about menstruation, resulting in poor menstruation management and menstrual hygiene. Therefore, understanding the extent of awareness, the nature of beliefs, and the sets of taboos is important to identify the factors that might adversely impact menstrual hygiene.

The impact of socioeconomic background on the awareness, beliefs, and taboos score is also examined. The data is collected using a structured questionnaire, largely from five districts of Gujarat. A sample of 1050 girls/women from different parts of Gujarat, in the menstruating age range, is collected. After data cleaning, 1025 responses are retained. The respondents were asked to rate on "Yes or No" alternatives about awareness about menstruation, and the intensity of beliefs on a five-point Likert-type belief scale, and a three-point scale for practicing taboos. Scores are calculated based on responses on each scale. The mean awareness score is 6.2 out of 10, whereas there are mixed responses about beliefs and taboos. There is an almost equal number of respondents who have strong beliefs and strictly practice the taboos, as there are respondents with mild beliefs and mild practice of taboos. Each of the scores for awareness, beliefs, and taboos are regressed against the socioeconomic status of the respondents. The broad observations, based on the regression results are, awareness increases with an increase in education level. Awareness was found to be different across the occupations, though except for those currently studying in higher education institutions, girls/women in any other profession, including school girls, have lower awareness about menstruation. Urban girls/women have higher awareness than rural girls/women. The awareness among women from developed districts is higher than those from developing and tribal districts.

Educated women have milder beliefs. There is no difference in the intensity of beliefs of rural and urban women. Married women have milder beliefs than single girls/women. Girls/women in nuclear families have milder beliefs compared to those in joint or extended families. Girls/women in developed districts have milder beliefs than those from developing and tribal districts.

While age did not seem to influence awareness and beliefs, the practice of taboos appears to get milder with age. Education seems to inversely influence the practice of taboos. Higher the education, lesser taboos are practiced. The practices of taboos by girls/women in joint and extended families are milder compared to those from nuclear families. The practices of taboos by the girls/women in urban areas are milder compared to those living in rural areas, those living in developing or tribal districts have milder taboos. Christians, Parsis, and Sikhs observe milder taboos compared to Hindus, Muslims, and Jains.

The use of mass media like television and radio can be made to create awareness among citizens, in general, irrespective of age and gender. Schools should organize menstruation and menstrual hygiene awareness programs to educate girls prior to their menarche and early menstrual cycles. The Government may consider including menstrual hygiene in the school curriculum to be made aware of the puberty changes. This would help in sensitizing the boys and in developing compassion towards the menstruating girls/women.

TRANSLATIONAL RESEARCH

The findings of this research may be used by policymakers to design awareness campaigns to debunk the myths associated with menstruation and hygienic menstruation practices. The findings may be disseminated in various forms, such as an article in women's magazines or a monograph for those with academic interests.

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