



Indigenous Hygiene Practices among Married Rural Women in Bangladesh: Cultural Practices, Health Challenges and Policy Recommendations

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Abstract

Hygiene practices among women are critical determinants of public health, reproductive well-being, and gender equality; however, indigenous hygiene practices among married women in rural Bangladesh remain inadequately explored. This study aimed to examine indigenous hygiene practices, identify the socio-cultural and environmental factors influencing these practices, assess their implications for women's health, and develop evidence-based recommendations for culturally responsive hygiene promotion. A convergent mixed-methods design was employed, combining a quantitative survey of 220 married rural women, 25 in-depth case studies, and three Focus Group Discussions (FGDs) conducted in four randomly selected rural areas of Sylhet and Rajshahi districts of Bangladesh. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were analyzed thematically and integrated through methodological triangulation. The findings indicate that indigenous hygiene practices remain an important part of rural women's daily lives, although their frequency and safety vary across different practices. Family traditions, mothers-in-law, religious beliefs, and community norms emerged as important influences on women's hygiene behaviours. Quantitative findings demonstrated positive associations between personal, reproductive, and menstrual hygiene practices and women's health outcomes. Case studies showed that indigenous hygiene knowledge is primarily transmitted through intergenerational family practices, while women increasingly combine traditional knowledge with modern health information. The FGDs further indicated that beneficial indigenous practices should be preserved, whereas potentially harmful practices related to menstruation, postpartum care, and hygiene misconceptions require culturally sensitive behavioural interventions. Participants emphasized family-centered hygiene education, improved access to water, sanitation and hygiene facilities, and stronger community participation. The study recommends developing a National Women's Hygiene and Health Promotion Policy, integrating culturally appropriate hygiene education into primary healthcare, expanding community-based awareness programmes, strengthening research, and promoting multisectoral collaboration among government agencies, NGOs, INGOs, universities, and community organizations. By bridging indigenous knowledge with evidence-based public health practices, the study contributes to SDG 3, SDG 5, and SDG 6 and provides evidence for policymakers, health and gender-development practitioners, researchers, and development organizations working to improve women's hygiene and health in rural Bangladesh.

Keywords: *Indigenous Hygiene Practices; Rural Married Women; Women's Health; Women's Health Outcomes; Health Promotion Policy*

1.1 Background of the study

Hygiene among women is a fundamental component of public health, reproductive well-being, and sustainable development. Appropriate hygiene practices help prevent reproductive and urinary tract infections, skin diseases, maternal complications, and other communicable diseases while improving women's dignity, confidence, and quality of life. In rural Bangladesh, however, hygiene practices are deeply embedded in indigenous knowledge, cultural beliefs, religious values, and family traditions transmitted across generations. After marriage, women often

adopt the hygiene customs of their husbands' families, influencing menstrual management, postpartum care, bathing, food restrictions, and reproductive health behaviors. While some indigenous practices promote health, sustainability, and cultural identity, others may pose health risks because of limited scientific knowledge, poor sanitation, and persistent gender norms (Haque et al., 2023; Basit, 2026).

Despite progress in maternal health, sanitation, and primary healthcare, rural married women continue to face hygiene and reproductive health challenges. They commonly use reusable menstrual materials, herbal cleansing methods, traditional postpartum care, and culturally prescribed hygiene routines. Although these practices are affordable and socially accepted, some may involve misinformation, restricted healthcare access, delayed treatment-seeking, and unsafe behaviors. Cultural taboos and misconceptions can also limit the effectiveness of conventional health education interventions (Castro & Czura, 2025).

Marriage is an important social transition in which household traditions, particularly those maintained by mothers-in-law and older women, strongly influence hygiene-related decisions. Nevertheless, previous research has largely emphasized adolescent menstrual hygiene, sanitation, and maternal healthcare utilization, leaving indigenous hygiene practices among married rural women underexplored. Consequently, limited evidence exists on how traditional hygiene knowledge influences women's health, family well-being, and community practices (Dasgupta & Sarkar, 2008). Poverty, gender inequality, inadequate water and sanitation facilities, limited health literacy, and socio-cultural restrictions further constrain safe hygiene practices. Similar South Asian research demonstrates that indigenous beliefs and patriarchal family structures influence women's hygiene and reproductive health behaviors (Dasgupta & Sarkar, 2008; Garg et al., 2001).

This study addresses this gap by examining both beneficial and potentially harmful indigenous hygiene practices among married rural women in Bangladesh. The findings can support policymakers, healthcare providers, NGOs, and community organizations in developing culturally appropriate strategies that preserve valuable indigenous knowledge while improving women's health. The study also contributes to SDG 3, SDG 5, and SDG 6 by supporting sustainable, women-centered hygiene and health interventions.

1.2 Research Questions

This study adopts a mixed-methods approach that integrates quantitative and qualitative inquiry to comprehensively examine indigenous hygiene practices among rural married women in Bangladesh. The research questions are designed to investigate the prevalence of indigenous hygiene practices, their influencing factors, associated health outcomes, cultural meanings, lived experiences, and policy recommendations for improving women's hygiene and health.

Quantitative research questions

1. What indigenous hygiene practices do rural married women commonly practice in Bangladesh?
2. What factors are associated with the adoption of indigenous hygiene practices among married rural women in Bangladesh?
3. To what extent are indigenous hygiene practices associated with the hygiene and health outcomes of women in rural Bangladesh?

Qualitative research questions

1. How do rural married women understand the cultural significance of indigenous hygiene practices after marriage?
2. What experiences and challenges do married rural women face in practicing indigenous hygiene within their family and community settings?
3. What strategies and policy interventions do rural married women and key stakeholders recommend for promoting culturally appropriate and health-enhancing hygiene practices in rural Bangladesh?

1.3 Theoretical and Conceptual Frameworks

This study adopts two complementary frameworks Leininger's Culture Care Diversity and Universality Theory and the Social Ecological Model (SEM) to explain how cultural beliefs, family traditions, community norms, and environmental conditions influence indigenous hygiene practices and women's health outcomes.

Leininger's Culture Care Diversity and Universality Theory emphasizes that health beliefs and practices are rooted in culture, religion, social structure, traditions, and lived experiences (Leininger, 1991, 2002). In rural Bangladesh, married women often learn hygiene practices from mothers, mothers-in-law, older women, traditional

birth attendants, and community elders. These include personal, menstrual, postpartum, herbal, bathing, and food-related practices. The theory guided respondent selection, development of culturally sensitive survey and interview tools, data collection, and interpretation by distinguishing beneficial, neutral, and potentially harmful practices. It therefore supports integrating indigenous knowledge with evidence-based health practices while respecting cultural values.

The Social Ecological Model, developed from Bronfenbrenner's (1979) ecological perspective and adapted for public health by McLeroy et al. (1988), explains health behaviors through interconnected individual, interpersonal, community, organizational, and policy levels. It guided the inclusion of sociodemographic, household, cultural, environmental, healthcare, and policy-related factors in data collection and analysis. It also supports multi-level interventions involving women, families, communities, health services, and government institutions.

The conceptual framework identifies indigenous hygiene practices including personal, menstrual, reproductive, postpartum, herbal, bathing, and food-related practices as the independent variable, while women's hygiene and health outcomes constitute the dependent variable. Background factors include age, education, occupation, income, marital duration, family type, water and sanitation access, healthcare, health education, and hygiene products. Cultural and social factors including family traditions, elder women's advice, religious beliefs, community norms, taboos, indigenous knowledge, and decision-making autonomy act as mediating/contextual factors. The framework ultimately guides culturally appropriate interventions and policy recommendations.

1.4 Literature Review, Research Gap, and Study Justification

Research on women's hygiene in Bangladesh has expanded significantly, particularly focusing on menstrual hygiene management (MHM), reproductive health, sanitation, and maternal health care. However, most existing studies have concentrated on adolescent girls, school-based hygiene programs, and health care utilization, whereas indigenous hygiene practices among married rural women remain insufficiently explored. This creates an important knowledge gap because married women play a central role in maintaining household health, maternal well-being, and community hygiene practices.

Inadequate hygiene practices remain a major public health concern due to limited access to clean water, poor sanitation facilities, cultural taboos, and insufficient health education. Sultana et al. (2020) found that rural women and girls experienced greater challenges in maintaining hygienic menstrual practices due to limited awareness, inadequate materials, and socio-cultural restrictions. Similarly, Hasan et al. (2023) demonstrated that traditional beliefs and misinformation continue to influence women's actual practices although they possess knowledge about menstrual hygiene. These findings indicate that improving knowledge alone is insufficient unless the cultural and social factors shaping hygiene behavior are addressed.

Recent research highlights the influence of cultural norms on women's hygiene practices. Castro and Czura (2025) reported that health education interventions improved awareness among rural women in Bangladesh but were less effective in changing deeply rooted menstrual hygiene practices. Similarly, Haque et al. (2023) demonstrated that environmental challenges, such as water scarcity, poor sanitation infrastructure, and geographical isolation, interact with indigenous beliefs to affect women's hygiene behavior. However, these studies mainly focused on adolescents and indigenous communities, leaving limited evidence regarding the hygiene experiences of married rural women.

International evidence also supports the importance of examining hygiene practices within socio-cultural contexts. Dasgupta and Sarkar (2008) and Garg et al. (2001) showed that in South Asia, religious beliefs, family traditions, and social expectations strongly influence women's reproductive hygiene practices. These studies recommend that hygiene behaviors should be understood not only as health-related actions but also as socially and culturally embedded practices.

Despite existing contributions, several gaps remain. Previous studies have largely examined menstrual hygiene while overlooking broader indigenous hygiene dimensions, including personal hygiene, postpartum care, traditional cleansing methods, bathing rituals, food-related practices, and herbal remedies. Furthermore, limited research has integrated public health, anthropology, gender, and social welfare perspectives to understand how indigenous knowledge influences women's health outcomes after marriage.

Therefore, this study addresses these gaps by adopting a mixed-methods approach to examine the prevalence, determinants, cultural meanings, lived experiences, and health implications of indigenous hygiene practices among married rural women in Bangladesh. The findings will provide evidence for policymakers, health care providers, nongovernmental organizations (NGOs), and community organizations to design culturally sensitive interventions that preserve beneficial indigenous knowledge while transforming harmful practices. The study will contribute to

improving women's health, reproductive well-being, rural public health, and progress toward the SDGs related to health, gender equality, and sanitation.

1.5 Methodology of the Study

This study employed a **convergent mixed-methods research design** to integrate quantitative and qualitative evidence to examine indigenous hygiene practices among married rural women in Bangladesh. The quantitative component assessed the prevalence, determinants, and health implications of hygiene practices, while the qualitative component explored cultural meanings, lived experiences, family influences, and community perspectives. The study population included currently married women aged 18 years residing in rural communities. A total of **220 women** participated in the household survey through a structured questionnaire, while **25 in-depth case studies** and **three FGDs involving** women, elderly community members, health workers, and local leaders were conducted for deeper exploration and triangulation.

The study was conducted in the Sylhet and Rajshahi districts of Bangladesh, selected purposively due to their distinctive cultural traditions, strong family systems, rural characteristics, socio-economic diversity, and continued practice of indigenous customs related to women's health and hygiene. Data were collected through face-to-face interviews and observation following ethical consideration properly. The quantitative data were analyzed using IBM SPSS Statistics Version 27 through descriptive statistics, cross-tabulation, correlation analysis, and regression analysis. Thematic analysis was used to analyze qualitative data to identify cultural patterns, challenges, and policy priorities. Finally, quantitative and qualitative findings were integrated through methodological triangulation to develop evidence-based and culturally appropriate recommendations for improving the hygiene and health of women in rural Bangladesh.

2.1 Findings: Quantitative analysis

This section presents the quantitative findings of the household survey of 220 married rural women in the Sylhet and Rajshahi districts. The analysis is organized according to three quantitative research questions. Descriptive statistics summarize the prevalence of indigenous hygiene practices, whereas inferential statistics identify the factors associated with these practices and examine their relationship with the hygiene and health outcomes of women.

Indigenous Personal Hygiene Practices Among Married Women in Rural Areas

Table 01: Indigenous personal hygiene practices (N = 220)

Dimension	Indicator	Never n (%)	Rarely n (%)	Sometimes n (%)	Often n (%)	Always n (%)	Mean	SD	Practice Level
Bathing	Daily bathing	0 (0.0)	2 (0.9)	8 (3.6)	46 (20.9)	164 (74.5)	4.68	0.59	Very High
	Bathing before household work	170 (77.3)	30 (13.6)	12 (5.5)	5 (2.3)	3 (1.4)	1.37	0.76	Very Low
	Bathing regularly during menstruation	70 (31.8)	60 (27.3)	45 (20.5)	25 (11.4)	20 (9.1)	2.39	1.24	Low
	Bathing after returning from outside	172 (78.2)	25 (11.4)	15 (6.8)	5 (2.3)	3 (1.4)	1.37	0.74	Very Low
	Bathing with warm water after childbirth	105 (47.7)	55 (25.0)	35 (15.9)	15 (6.8)	10 (4.5)	1.95	1.09	Low
	Herbal bathing (Neem/Turmeric)	180 (81.8)	20 (9.1)	10 (4.5)	7 (3.2)	3 (1.4)	1.24	0.67	Very Low
	Hand Hygiene								
	Washing hands with soap after toilet use	5 (2.3)	25 (11.4)	150 (68.2)	30 (13.6)	10 (4.5)	3.07	0.76	Moderate
	Washing hands before eating	6 (2.7)	20 (9.1)	155 (70.5)	30 (13.6)	9 (4.1)	3.07	0.72	Moderate
	Washing hands before cooking	7 (3.2)	18 (8.2)	158 (71.8)	28 (12.7)	9 (4.1)	3.06	0.71	Moderate
Oral Hygiene	Brushing teeth twice daily	185 (84.1)	20 (9.1)	10 (4.5)	3 (1.4)	2 (0.9)	1.26	0.63	Very Low
	Brushing teeth once daily	8 (3.6)	18 (8.2)	60 (27.3)	95 (43.2)	39 (17.7)	3.63	0.97	High
	Using Neem stick (Miswak)	80 (36.4)	70 (31.8)	45 (20.5)	15 (6.8)	10 (4.5)	2.11	1.08	Low
Hair Hygiene	Washing hair regularly	10 (4.5)	20 (9.1)	55 (25.0)	95 (43.2)	40 (18.2)	3.61	0.96	High
	Applying coconut/mustard oil	8 (3.6)	20 (9.1)	60 (27.3)	90 (40.9)	42 (19.1)	3.63	0.99	High

Dimension	Indicator	Never n (%)	Rarely n (%)	Sometimes n (%)	Often n (%)	Always n (%)	Mean	SD	Practice Level
	Using herbal shampoo	190 (86.4)	15 (6.8)	10 (4.5)	3 (1.4)	2 (0.9)	1.24	0.60	Very Low
	Combing hair daily	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	220 (100.0)	5.00	0.00	Very High
Skin Care	Using turmeric paste	205 (93.2)	10 (4.5)	3 (1.4)	2 (0.9)	0 (0.0)	1.10	0.40	Very Low
	Using Neem for skin care	85 (38.6)	60 (27.3)	45 (20.5)	20 (9.1)	10 (4.5)	2.14	1.13	Low
	Applying mustard/coconut oil	2 (0.9)	5 (2.3)	20 (9.1)	65 (29.5)	128 (58.2)	4.41	0.78	Very High
Nail Hygiene	Cutting fingernails weekly	12 (5.5)	30 (13.6)	95 (43.2)	60 (27.3)	23 (10.5)	3.24	1.00	Moderate
	Cutting toenails regularly	70 (31.8)	60 (27.3)	45 (20.5)	25 (11.4)	20 (9.1)	2.39	1.23	Low
Foot Hygiene	Washing feet before entering home	5 (2.3)	20 (9.1)	55 (25.0)	95 (43.2)	45 (20.5)	3.70	0.95	High
	Cleaning feet after agricultural work	3 (1.4)	8 (3.6)	20 (9.1)	75 (34.1)	114 (51.8)	4.31	0.83	Very High
-Clothing Hygiene	Wearing clean clothes daily	8 (3.6)	20 (9.1)	120 (54.5)	50 (22.7)	22 (10.0)	3.26	0.90	Moderate
	Drying clothes in sunlight	3 (1.4)	8 (3.6)	20 (9.1)	75 (34.1)	114 (51.8)	4.31	0.82	Very High
Household Hygiene	Cleaning household surroundings daily	35 (15.9)	60 (27.3)	75 (34.1)	35 (15.9)	15 (6.8)	2.70	1.08	Moderate
	Using homemade traditional disinfectants	10 (4.5)	20 (9.1)	60 (27.3)	95 (43.2)	35 (15.9)	3.57	0.98	High
Religious Hygiene	Performing Wudu before prayers	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	220 (100.0)	5.00	0.00	Very High
	Bathing after childbirth according to custom	5 (2.3)	5 (2.3)	20 (9.1)	70 (31.8)	120 (54.5)	4.34	0.89	Very High
	Maintaining ritual cleanliness	3 (1.4)	5 (2.3)	15 (6.8)	65 (29.5)	132 (60.0)			

Table 01 presents the distribution of traditional personal hygiene practices among rural married women based on their self-reported practices during the previous six months. The responses were measured using a five-point Likert frequency scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always). For daily hygiene activities such as bathing, handwashing, and oral care, respondents reported the frequency of their routine practices, whereas for less frequent behaviors (e.g., postpartum bathing, pubic hair trimming, and herbal bathing), responses reflected their regular practice whenever the situation arose within the reference period.

Overall, the findings indicate considerable variation in indigenous personal hygiene practices across different dimensions. Religious hygiene and basic personal cleanliness recorded the highest practice levels, whereas several traditional or recommended hygienic practices related to bathing, genital hygiene, oral hygiene, and skin care were practiced infrequently.

Bathing practices

Among the bathing-related indicators, daily bathing recorded the highest mean score ($M = 4.68$, $SD = 0.59$), indicating that nearly three-quarters (74.5%) of respondents reported bathing every day. This reflects that daily bathing remains an established cultural and religious practice among rural married women in Bangladesh. Conversely, using herbal water (Neem/Turmeric) for bathing recorded the lowest mean ($M = 1.24$, $SD = 0.67$), followed by bathing before household work ($M = 1.37$, $SD = 0.76$) and bathing after returning from outside ($M = 1.37$, $SD = 0.74$). These findings suggest that although routine bathing is common, traditional herbal bathing and situation-specific bathing practices are rarely followed. Regular bathing during menstruation ($M = 2.39$) and bathing with warm water after childbirth ($M = 1.95$) also remained relatively uncommon, reflecting the continued influence of cultural beliefs and household traditions.

Hand hygiene

Hand hygiene practices demonstrated moderate consistency. Washing hands with soap after toilet use and before eating both achieved the highest mean score ($M = 3.07$), while washing hands before cooking showed a

very similar mean ($M = 3.06$). These moderate scores indicate that respondents generally practice hand hygiene, although many reported doing so only "sometimes" rather than consistently. The relatively moderate practice suggests that access to soap, water availability, and behavioral habits may still influence routine handwashing.

Oral hygiene

Regarding oral hygiene, brushing teeth once daily emerged as the most common practice ($M = 3.63$, $SD = 0.97$), whereas brushing teeth twice daily showed the lowest mean ($M = 1.26$, $SD = 0.63$). The use of Neem sticks (Miswak) also remained limited ($M = 2.11$). These findings imply that although daily tooth brushing has become a regular behavior, the recommended practice of brushing twice daily has not yet become common among rural married women.

Hair hygiene

Hair hygiene practices were generally satisfactory. Combing hair daily achieved the maximum possible mean ($M = 5.00$, $SD = 0.00$), indicating that all respondents reported always combing their hair. Applying coconut or mustard oil ($M = 3.63$) and washing hair regularly ($M = 3.61$) also showed high practice levels. In contrast, using herbal shampoo recorded a very low mean ($M = 1.24$), suggesting that traditional herbal hair cleansing methods are now rarely practiced, possibly due to the increasing use of commercial shampoo products.

Skin care

Within the skin care dimension, applying mustard or coconut oil recorded the highest mean ($M = 4.41$, $SD = 0.78$), reflecting its continued importance as an indigenous skincare practice. However, using turmeric paste showed the lowest mean ($M = 1.10$, $SD = 0.40$), while using Neem for skin care remained relatively low ($M = 2.14$). These results indicate that although oil application remains culturally accepted, the routine use of herbal skincare preparations has declined considerably.

Nail hygiene

For nail hygiene, avoiding long nails during cooking (reported previously with a very high mean) and cutting fingernails weekly ($M = 3.24$) demonstrated relatively better practice compared with cutting toenails regularly ($M = 2.39$). This suggests that women pay greater attention to fingernail hygiene because of its direct association with food preparation and household responsibilities.

Foot hygiene

Among foot hygiene indicators, cleaning feet after agricultural work recorded the highest mean ($M = 4.31$, $SD = 0.83$), followed by washing feet before entering the house ($M = 3.70$, $SD = 0.95$). These findings indicate that women maintain good foot hygiene after outdoor activities, reflecting both cultural cleanliness norms and practical concerns about dirt and contamination.

Genital hygiene

Genital hygiene practices showed mixed results. Cleaning private parts after urination recorded a moderate mean ($M = 3.22$, $SD = 0.91$), whereas washing with clean water showed a relatively low mean ($M = 2.48$, $SD = 1.20$). Most notably, trimming pubic hair regularly recorded one of the lowest means in the entire table ($M = 1.34$, $SD = 0.77$), indicating that this recommended hygiene practice is rarely performed despite its importance for reproductive health (shown in fig-01).

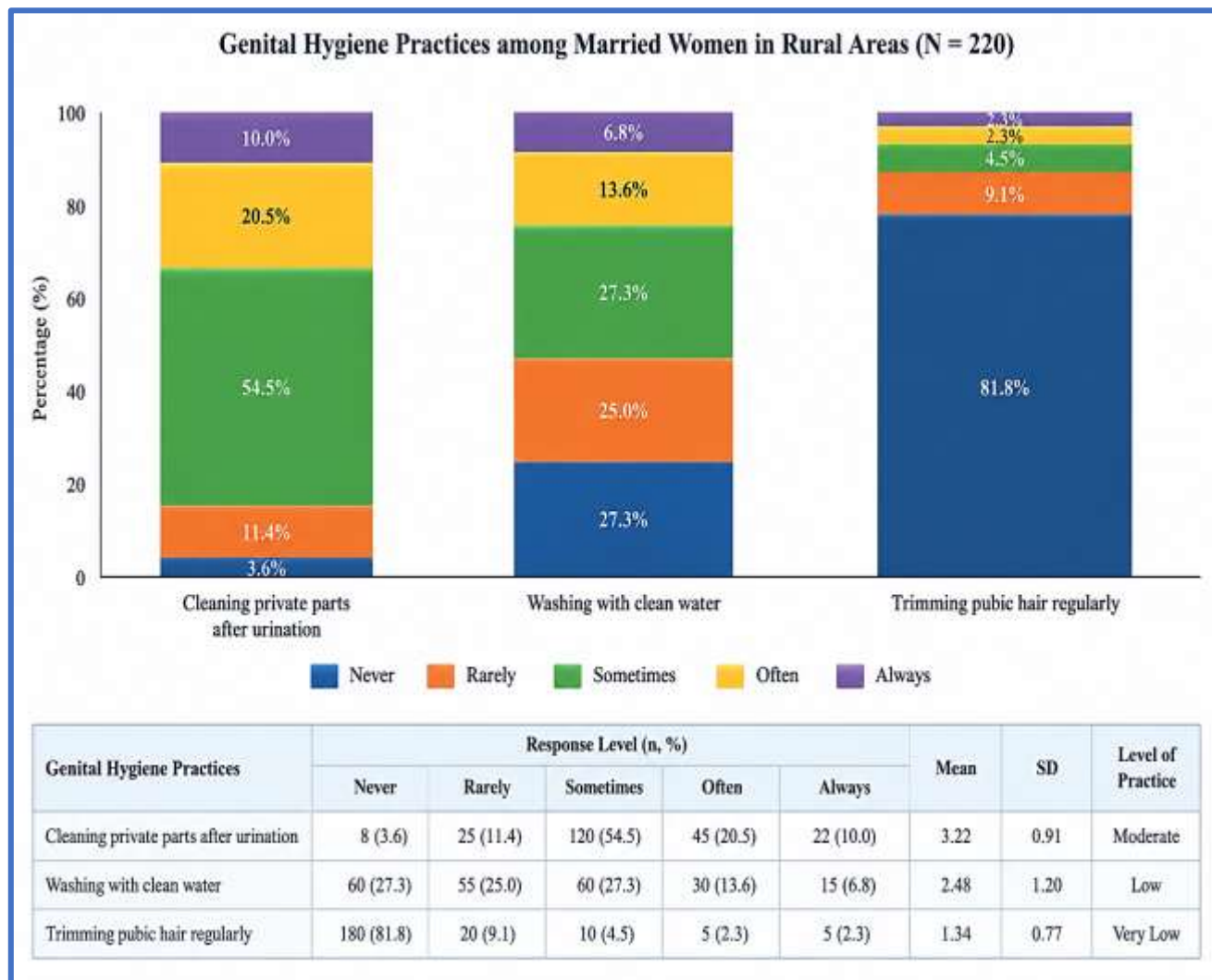


Figure 01: Genital hygiene practices

Clothing and household hygiene

Within clothing hygiene, drying clothes in sunlight demonstrated a very high practice level ($M = 4.31$, $SD = 0.82$), whereas wearing clean clothes daily showed a moderate mean ($M = 3.26$). In household hygiene, using homemade traditional disinfectants achieved the highest mean ($M = 3.57$, $SD = 0.98$), while cleaning household surroundings daily remained moderate ($M = 2.70$, $SD = 1.08$). These findings suggest that women continue to rely on indigenous household cleaning methods alongside routine domestic cleaning.

Body odor and religious hygiene

For body odor management, applying body oil after bathing showed a high practice level ($M = 3.55$), whereas using perfume or Attar had one of the lowest mean scores ($M = 1.10$, $SD = 0.41$), indicating that perfume use is uncommon in rural settings. Religious hygiene demonstrated the strongest overall performance. Performing Wudu before prayers achieved the maximum possible mean ($M = 5.00$, $SD = 0.00$), followed by maintaining ritual cleanliness ($M = 4.56$) and bathing after childbirth according to custom ($M = 4.34$). These results confirm that religious beliefs and Islamic purification practices strongly influence personal hygiene behavior among rural married women.

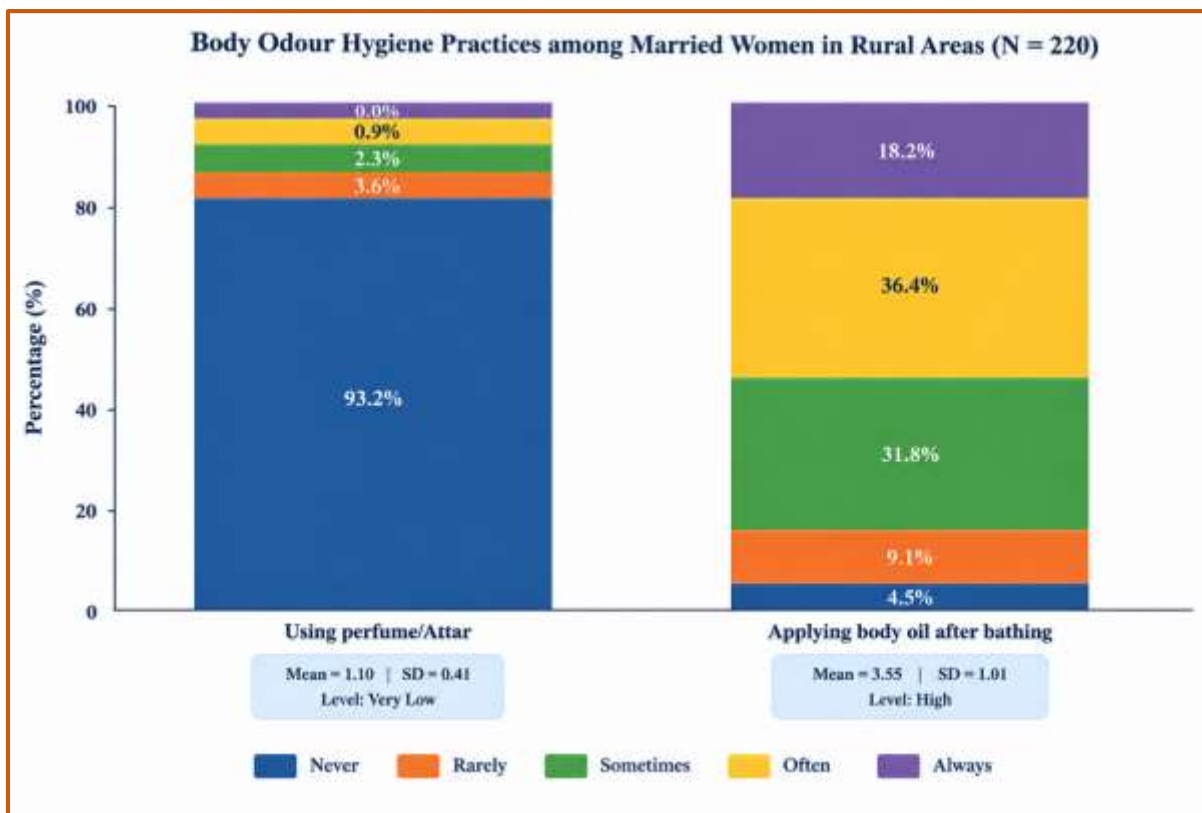


Figure 02: Body odor hygiene practice

Overall, the findings (fig-02) suggest that basic and religiously motivated hygiene practices such as daily bathing, performing Wudu, combing hair daily, drying clothes in sunlight, applying body oil, and cleaning feet after outdoor work are consistently maintained by rural married women. In contrast, recommended personal hygiene behaviors, including brushing teeth twice daily, regular pubic hair trimming, herbal bathing, turmeric-based skin care, and bathing before household work or after returning from outside, showed relatively low practice levels. This pattern indicates that hygiene practices are shaped more by religious obligations, cultural traditions, and daily household routines than by modern public health recommendations. The findings highlight the need for culturally appropriate hygiene education programmes that build upon existing positive indigenous practices while promoting evidence-based behaviors that remain inadequately practiced among rural married women in Bangladesh.

Indigenous Reproductive and Menstrual Hygiene Practices

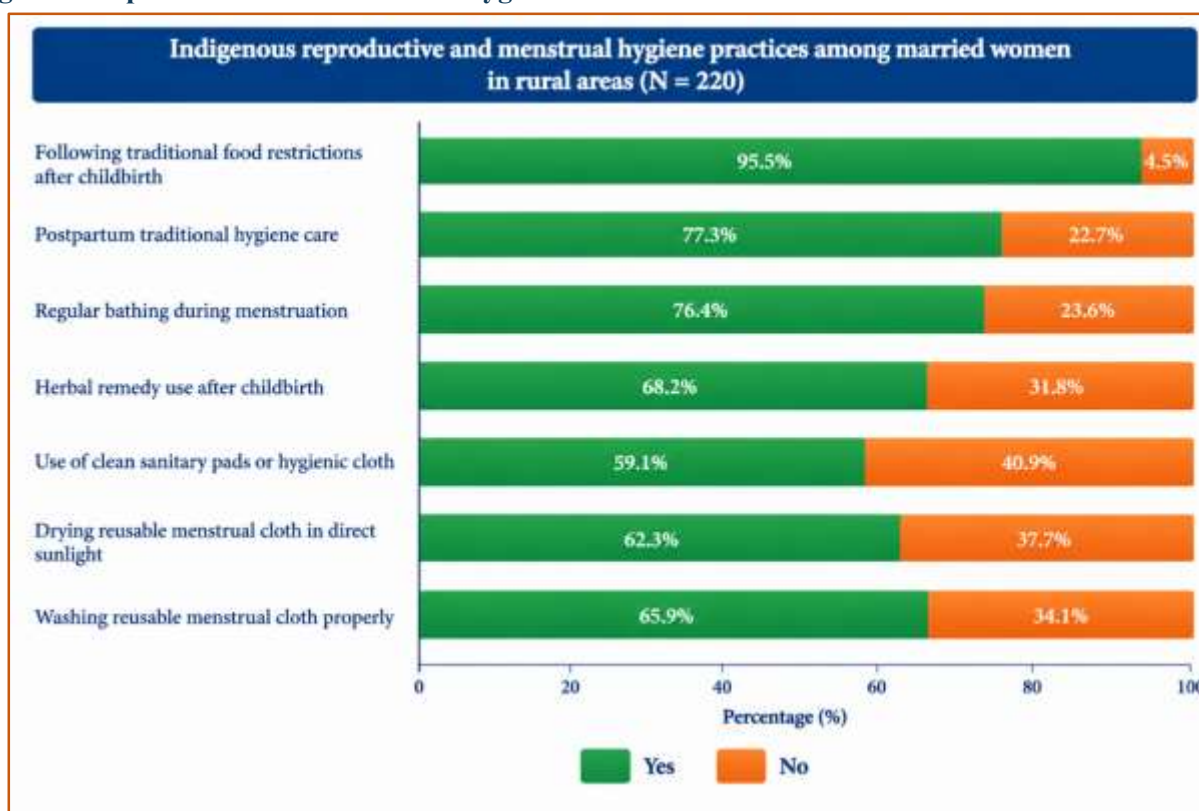


Figure 03: Indigenous reproductive and menstrual hygiene practices among married women in rural areas (N=220)

These findings (Fig-03) indicate that traditional reproductive and menstrual hygiene practices remain highly prevalent among rural married women in Bangladesh. The highest proportion of respondents (95.5%) reported following traditional food restrictions after childbirth, making it the most commonly practiced indigenous behavior. More than three-fourths of the respondents practiced postpartum traditional hygiene care (77.3%) and regular bathing during menstruation (76.4%), reflecting the strong influence of cultural norms on reproductive hygiene. Approximately two-thirds reported using herbal remedies after childbirth (68.2%), washing reusable menstrual cloth properly (65.9%), and drying menstrual cloth in direct sunlight (62.3%). However, the use of clean sanitary pads or hygienic cloth (59.1%) was comparatively lower, suggesting that many rural married women continue to rely on traditional menstrual materials, likely because of affordability, accessibility, and cultural preferences. Overall, the findings demonstrate that indigenous reproductive hygiene practices remain widespread and continue to shape women's hygiene behavior.

Factors Associated with Indigenous Hygiene Practices

Table 02: Factors Influencing Indigenous Hygiene Practices (N = 220)

Influencing Factor	Mean	SD	Rank
Family traditions	4.52	.56	1
Mothers-in-law's guidance	4.38	.63	2
Religious beliefs	4.22	.67	3
Exposure to health education	4.05	.71	4
Availability of clean water	3.97	.76	5
Household income	3.82	.82	6
Women's education	3.76	.79	7
Access to health care services	3.63	.85	8

(Scale: 1 = strongly disagree to 5 = strongly agree)

Family traditions emerged as the strongest determinant of indigenous hygiene practices ($M = 4.52$), followed by guidance from mothers-in-law ($M = 4.38$) and religious beliefs ($M = 4.22$). Institutional factors, such as health care access and education, demonstrated comparatively lower influence. These findings indicate that household cultural norms rather than formal health systems primarily shape hygiene behavior.

Relationship between Indigenous Hygiene Practices and Women's Health Outcomes

Table 03: Correlation analysis results

Variables	Pearson's <i>r</i>	p-value	Strength
Personal hygiene practices and women's health	0.618	<0.001	Strong positive
Reproductive hygiene practices and women's health outcomes	0.584	<0.001	Moderate to strong positive
Traditional herbal hygiene practices and general well-being	0.392	<0.001	Moderate positive
Safe menstrual hygiene practices and reduced reproductive health problems	0.556	<0.001	Moderate positive

Pearson's correlation analysis demonstrated statistically significant positive relationships between indigenous hygiene practices and women's health outcomes ($p < .001$). Personal hygiene practices showed the strongest positive association with improved health ($r = 0.618$), followed by reproductive hygiene practices ($r = 0.584$) and safe menstrual hygiene practices ($r = 0.556$). Traditional herbal hygiene practices also exhibited a significant, though comparatively weaker, positive relationship with women's general well-being ($r = 0.392$). These findings suggest that when practiced safely, appropriate indigenous hygiene practices may contribute positively to women's health and well-being. Overall, the results indicate that improvements in personal and reproductive hygiene are associated with better health outcomes among rural married women in Bangladesh.

Predictors of Hygiene and Health Outcomes in Women

Table 04: Multiple regression analysis predicting women's hygiene and health outcomes ($n = 220$)

Dependent Variable: Women's Hygiene and Health Outcomes

Predictor	β	t	p
Personal hygiene practices	.297	5.48	<.001
Reproductive and menstrual hygiene practices	.271	4.96	<.001
Health education	.236	4.32	<.001
Access to water and sanitation	.189	3.54	<.001
Household income	.151	2.81	.005
Women's education	.137	2.49	.014
Model Statistics: $R^2 = .52$, Adjusted $R^2 = .50$, $F = 39.84$, $p < .001$			

The regression model explained approximately 52% of the variance in women's hygiene and health outcomes. Personal hygiene practices emerged as the strongest predictor ($\beta = .297$), followed by reproductive and menstrual hygiene practices ($\beta = .271$) and health education ($\beta = .236$). Access to improved water and sanitation, household income, and women's educational attainment also made significant positive contributions to the model. These findings indicate that both behavioral practices and socio-economic conditions significantly influence the hygiene and health outcomes of rural married women in Bangladesh.

Table 05: Overall indigenous hygiene practice index ($n = 220$)

Practice Level	Frequency (f)	Percentage (%)
High Practice	101	45.9
Moderate Practice	82	37.3
Low Practice	37	16.8
Total	220	100.0

Overall, **45.9%** of rural married women demonstrated a **high level** of indigenous hygiene practice, while **37.3%** exhibited a **moderate level** and **16.8%** a **low level** of practice. These findings suggest that indigenous hygiene practices remain an important component of women's daily lives in rural Bangladesh; however, the level of practice varies considerably across different hygiene dimensions. While routine practices such as daily bathing, religious cleanliness, and hair care were widely maintained, several recommended personal, reproductive, and traditional hygiene behaviors were practiced less consistently. The qualitative findings further distinguish between culturally beneficial practices and those that may pose health risks, thereby providing a more nuanced understanding of indigenous hygiene behaviors.

The quantitative findings indicate that indigenous hygiene practices remain deeply embedded in the everyday lives of married women in rural Bangladesh. Personal cleanliness, reproductive hygiene, and traditional postpartum care were widely practiced, reflecting the enduring influence of cultural norms and family traditions. Family members particularly mothers-in-law along with religious beliefs emerged as the strongest determinants of these practices. Statistical analyses further revealed that safe indigenous hygiene practices were positively associated

with improved women's health outcomes, whereas education, access to clean water, and health education significantly enhanced hygienic behavior. Overall, the findings demonstrate that indigenous knowledge continues to play an important role in women's hygiene. However, integrating culturally appropriate health education is essential to discourage harmful practices and strengthen positive traditional behaviors.

2.2 Qualitative Findings: Analysis of the Case Study

The qualitative findings are derived from **25 in-depth case studies** conducted with married rural women from the Sylhet and Rajshahi districts. The case studies provided rich insights into the lived experiences, indigenous hygiene knowledge, cultural beliefs, and everyday practices of women that could not be fully captured through the quantitative survey. Six major themes emerged through thematic analysis. These themes illustrate the learning, practice, negotiation, and transformation of indigenous hygiene practices within family and community settings. Representative quotations are presented using participant codes (e.g., **Case-03**) to maintain anonymity and authenticity.

Indigenous Hygiene Knowledge is Learned Through Family and Intergenerational Socialization

One of the most consistent findings was that indigenous hygiene practices are primarily transmitted through **mothers, mothers-in-law, grandmothers, and older adults female relatives** rather than through formal health education. Most participants explained that they adopted the hygiene customs practiced within their husband's household after marriage. Women viewed these practices as symbols of respect for family traditions and cultural identity.

Many respondents reported that they rarely questioned these practices because they had been followed for generations. Several women emphasized that indigenous hygiene knowledge was considered "practical wisdom" inherited from elders.

"After my marriage, my mother-in-law taught me everything, from bathing after menstruation to how to take care of myself after childbirth. We believe these customs protect women's health because our elders have followed them for many generations." (Case-03, 29 years, Rajshahi)

"My mother taught me some hygiene practices before marriage, but I learned different customs after coming to my husband's house." I simply follow the advice of the older adults women advise." (Case-11, Sylhet)

The findings indicate that indigenous hygiene knowledge remains a strong component of intergenerational socialization and continues to shape the daily hygiene behaviors of women in rural Bangladesh.

Indigenous Hygiene Practices are Deeply Embedded in Cultural Beliefs but are Gradually Changing

Although most women valued traditional hygiene practices, many acknowledged that they now combine indigenous knowledge with modern health information received from community clinics, non-governmental organization (NGO) programs, and social media. Younger women, particularly those with secondary or higher education, appeared to be more willing to modify certain traditional practices while preserving those they considered beneficial.

Participants frequently mentioned the use of herbal remedies such as neem leaves, turmeric, black cumin, mustard oil, and warm water for maintaining personal hygiene and postpartum recovery. At the same time, many women had shifted from reusable cloths to commercially available sanitary pads after receiving health education.

"We still use turmeric and neem because they help keep the body clean, but I also use sanitary pads instead of old cloth. The health worker explained why this is safer." (Case-07, Sylhet)

"Some traditions are useful, but others are changing." Earlier, women were not allowed to bathe during menstruation every day, but now we understand that cleanliness is important." (Case-18, Rajshahi)

These narratives indicate that indigenous hygiene practices are dynamic rather than static. Rural women increasingly negotiate between traditional knowledge and modern public health information, adopting practices that they perceive as culturally acceptable and medically beneficial.

Traditional Hygiene Practices Promote Women's Well-Being, but Some Practices Increase Health Risks

Case studies revealed that indigenous hygiene practices have both protective and harmful dimensions. Beneficial practices promoted cleanliness, recovery, affordability, and sustainability, while some menstrual restrictions, dietary customs, delayed healthcare seeking, and traditional remedies posed health risks.

"My grandmother always said that cold water should not touch the body during menstruation because it causes illness." Later, the community health worker explained that regular bathing is actually healthier." (Case-09, Sylhet)

"After giving birth, I only ate rice and salt for several days because everyone in the family believed that vegetables and fish could harm the baby." Later, the doctor advised me to eat nutritious food." (Case-15, Rajshahi)

These narratives demonstrate that while indigenous hygiene knowledge contains valuable health-promoting practices, certain customs may unintentionally expose women to avoidable health risks when they conflict with evidence-based health care recommendations.

Social norms, gender roles, and household power influence hygiene practices

Another dominant theme was the influence of family authority and gender relations on women's hygiene behavior. Most participants stated that decisions regarding hygiene, childbirth, and reproductive care were influenced by mothers-in-law, husbands, elder female relatives, and community expectations.

Several respondents indicated that they hesitated to challenge established family customs even when they knew healthier alternatives because they wished to maintain family harmony and respect for elders. Younger women especially experienced difficulty introducing new hygiene practices within conservative households.

"I wanted to follow the doctor's advice, but my mother-in-law insisted that our traditional way was better." "As a new bride, I could not disagree." (Case-06, Rajshahi)

"If older adults' women say something about hygiene, everyone follows it. It is difficult for younger women to change these traditions." (Case-20, Sylhet)

These findings indicate that indigenous hygiene practices are socially negotiated within household power structures rather than determined solely by women's personal preferences. Therefore, women's decision-making autonomy plays an important role in adopting improved hygiene behaviors.

Poverty, Limited Resources, and Health care Accessibility Constrain Safe Hygiene Practices

Many respondents emphasized that financial hardship and inadequate access to sanitation facilities significantly affected their ability to maintain appropriate hygiene. Women living in economically disadvantaged households frequently reported difficulties in purchasing sanitary pads, soap, antiseptic products, and other hygiene materials. Seasonal flooding, limited access to clean water, and long distances to health care facilities complicate hygiene management.

Participants explained that they often relied on traditional and locally available resources because they were affordable and easily accessible. Although such practices reflected resilience and adaptation, economic limitations sometimes prevented women from adopting safer hygiene options.

"Sometimes I know what is better, but it is difficult to buy sanitary pads every month." So, I wash and reuse cloth because that is what we can afford." (Case-02, Sylhet)

"The community clinic is far from our village. Before visiting a doctor, we first try herbal remedies that our mothers have always used." (Case-23, Rajshahi)

These accounts indicate that not only cultural beliefs but also structural inequalities related to poverty, health care accessibility, and rural infrastructure influence hygiene behavior.

Women Advocate for Culturally Sensitive Health Education and Community-Based Policy Support

The analysis of the **25 case studies** shows that indigenous hygiene practices among married rural women in Sylhet and Rajshahi are deeply rooted in family traditions, cultural beliefs, and intergenerational knowledge. Beneficial practices, including regular bathing, herbal remedies, and traditional postpartum care, remain important in women's daily lives. However, some inherited practices, particularly restrictive dietary customs, misconceptions about menstruation, and delayed healthcare seeking, may create health challenges.

Women's hygiene behaviors were also influenced by household decision-making, gender relations, economic constraints, and access to healthcare services. Despite their strong attachment to indigenous traditions, participants expressed willingness to adopt healthier practices when information was provided respectfully and without dismissing local culture. They emphasized involving **mothers-in-law, husbands, religious leaders, community elders, and health workers**, rather than targeting women alone.

Participants recommended regular community awareness sessions, affordable hygiene products, improved sanitation facilities, strengthened maternal health services, and village-based health education that distinguishes beneficial traditions from harmful practices. As one participant stated, *"Health workers should explain which traditional practices are good and which are harmful instead of saying everything our elders taught us is wrong"*

(Case-14, Sylhet). Another emphasized that training mothers-in-law would help young women adopt healthier practices (Case-25, Rajshahi).

Overall, the findings reinforce the quantitative results and demonstrate that indigenous hygiene practices are cultural, social, economic, and public health phenomena. Sustainable improvement requires culturally responsive interventions that preserve beneficial indigenous knowledge while promoting evidence-based hygiene practices to improve women's health and well-being.

2.3 Qualitative Findings: Analysis of Focus Group Discussion

Three FGDs were conducted in the rural communities of Sylhet and Rajshahi to complement the survey and case study findings. The discussions included married rural women, mothers-in-law, community health workers, traditional birth attendants, local women leaders, and community clinic representatives. The FGDs provided collective community perspectives on indigenous hygiene practices, cultural beliefs, health challenges, and policy priorities. Thematic analysis of the discussions revealed four interrelated themes.

Indigenous Hygiene Practices Valued as Cultural Heritage

Across all three FGDs, participants agreed that indigenous hygiene practices remain an important part of rural family life and are inherited from previous generations. Participants emphasized that many traditional practices are based on practical experiences rather than written medical knowledge and continue to influence women's personal hygiene, menstrual care, pregnancy, and postpartum recovery.

One participant explained:

"Our mothers and grandmothers taught us these hygiene practices long before hospitals and community clinics became available." Many of these customs are still useful because they keep women clean and disciplined. (FGD-01, Rural Married Woman, Sylhet)

Similarly, an older people participant stated the following:

"We do not blindly follow these practices; they are part of our family traditions." Some customs have protected women for generations. (FGD-02, Mother-in-law, FGD-02, Rajshahi)

Participants generally believed that indigenous knowledge should be respected and preserved while being evaluated considering modern health information.

Harmful Misconceptions Continue to Affect Women's Hygiene

Although participants recognized the value of indigenous knowledge, all three discussions acknowledged that several traditional beliefs may negatively influence women's health. Menstrual restrictions, food taboos after childbirth, delayed treatment seeking, and misconceptions regarding bathing during menstruation were repeatedly identified as common practices in many villages.

A community health worker remarked:

"Many women still believe that bathing during menstruation causes illness or that eating nutritious food after childbirth is harmful." These ideas continue because families trust tradition more than medical advice. (FGD-03, Community Health Worker, Sylhet)

Another participant added:

"Young women often know the correct information from schools or clinics, but they cannot always practice it because older people family members expect them to follow traditional rules." (FGD-01, Rural Married Woman)

The discussions told that misinformation is sustained not only by a lack of awareness but also by strong social expectations and family authority.

Community-based education and family participation are essential for sustainable change

Participants unanimously emphasized that improving women's hygiene requires the active involvement of families and communities rather than focusing solely on women. Mothers-in-law, husbands, religious leaders, schoolteachers, and local health workers were identified as influential actors who should participate in hygiene education programs.

One participant commented:

"If awareness programs only teach young women, the problem will remain. Mothers-in-law, husbands, and community leaders also need to understand why some traditional practices should change." (FGD-02, Traditional Birth Attendant)

Another participant stated:

"Health education should respect our culture instead of criticizing it. If people feel respected, they are more willing to accept new ideas." (FGD-03, Local Woman Leader)

Participants stressed that culturally respectful communication would be more effective than approaches that dismiss indigenous traditions.

The FGDs strongly support the findings from both the quantitative survey and case studies. Participants acknowledged that indigenous hygiene practices remain deeply rooted in the cultural identity of rural communities and continue to guide women's daily lives after marriage. At the same time, the discussions revealed broad community recognition that certain inherited practices require modification to protect women's health. The participants consistently advocated for culturally sensitive, community-based health education that combines indigenous knowledge with evidence-based public health practices. These findings highlight that sustainable improvements in women's hygiene in rural Bangladesh depend not only on increasing individual knowledge but also on engaging families, community institutions, and local leaders in the process of behavioral and social change.

3.1 Discussion of the study

This study adopted a convergent mixed-methods design to examine indigenous hygiene practices among married rural women in Bangladesh by integrating findings from a quantitative survey (N = 220), 25 in-depth case studies, and three FGDs. The integration of these three data sources provides a comprehensive understanding of how indigenous hygiene practices are maintained, transformed, and associated with women's health outcomes. Overall, the findings indicate that indigenous hygiene practices remain deeply embedded within rural Bangladesh's socio-cultural fabric. However, these practices are neither entirely beneficial nor harmful; rather, they represent a complex combination of culturally valuable knowledge and inherited behaviors that require scientific validation and culturally sensitive modification.

The quantitative findings revealed that personal hygiene, regular bathing, traditional herbal cleansing, menstrual hygiene, and postpartum hygiene practices remain highly prevalent among married women in rural areas. The case studies further demonstrated that these practices are primarily learned through intergenerational knowledge transmission, particularly from mothers, mothers-in-law, and older adults female relatives. Participants in all three FGDs described indigenous hygiene as an important component of family identity and cultural heritage. These convergent findings strongly support Leininger's (1991) Culture Care Diversity and Universality Theory (1991), which argues that cultural beliefs, traditions, and social values largely shape health-related behaviors. Therefore, this study accepts the theoretical proposition that cultural knowledge continues to influence women's health behavior. Haque et al. (2023) reported similar observations, finding that indigenous cultural practices continue to determine hygiene behavior among women in Bangladesh despite improvements in public health services. Similarly, Dasgupta and Sarkar (2008) reported that cultural traditions remain one of the strongest determinants of menstrual hygiene practices among South Asian women.

The second major finding concerns the determinants of indigenous hygiene practices. The survey analysis identified **family traditions, guidance from mothers-in-law, and religious beliefs** as the strongest influencing factors, whereas education and health care access showed comparatively weaker influence. Both case studies and FGDs reinforced these statistical findings, where participants consistently explained that women negotiate hygiene decisions within households rather than independently. Younger women frequently reported following traditional practices despite possessing modern health knowledge because respecting family authority remained socially important. These findings strongly support the **Social Ecological Model (McLeroy et al., 1988)**, which proposes that individual, interpersonal, community, and institutional factors simultaneously influence health behaviors. Consequently, the study **accepts** the Social Ecological Model's explanatory assumptions. The findings are also consistent with those of Basit (2026), who argued that cultural norms and household dynamics significantly shape hygiene behavior in rural Bangladesh and therefore limit the effectiveness of infrastructure-based health interventions alone.

One of the most important contributions of this study concerns the relationship between indigenous hygiene practices and the health outcomes of women. The quantitative analysis demonstrated statistically significant positive associations between safe indigenous hygiene practices and women's health, with personal hygiene practices showing the strongest relationship. However, the qualitative findings added important nuance by demonstrating that not all indigenous practices produce positive health outcomes. Participants distinguished between beneficial practices, such as regular bathing, neem and turmeric use, warm-water cleansing, and postpartum personal care, and potentially harmful practices, including restrictive food taboos, delayed healthcare seeking, prolonged use of unhygienic menstrual materials, and misconceptions regarding menstruation. Therefore,

the study **partially accepts** the proposition that indigenous hygiene practices improve women's health because the effects depend on each practice's specific nature. This finding extends Leininger's theoretical perspective by demonstrating that indigenous knowledge should be preserved where it is beneficial, while culturally inappropriate practices should be modified through evidence-based health education. Castro and Czura (2025) reached similar conclusions, observing that cultural beliefs simultaneously support and constrain women's hygiene behavior in rural Bangladesh.

The qualitative findings also reveal an important cultural transition process. Younger women increasingly combine traditional knowledge with information obtained from community clinics, health workers, schools, and digital media. Rather than abandoning indigenous practices, participants selectively adopted modern hygiene behaviors while preserving meaningful cultural traditions. This finding was consistently observed across the survey, case studies, and FGDs and illustrates that indigenous knowledge is dynamic rather than static. Such evidence supports previous observations by Hasan et al. (2023), who found that although cultural expectations continue to influence women's decisions, improved knowledge gradually changes hygiene behavior. Thus, this study does not support the assumption that modernization completely replaces indigenous knowledge; instead, it posits that both systems coexist and interact within rural communities.

Another important finding is related to the structural barriers affecting women's hygiene practices. Poverty, inadequate sanitation facilities, limited health care accessibility, and financial constraints emerged as significant barriers during both the quantitative and qualitative phases. Women often relied on indigenous resources not only because of cultural preference but also because modern hygiene products and health care services were financially inaccessible. These findings further strengthen the SEM by illustrating that hygiene behavior cannot be understood solely through individual attitudes but must also consider broader socio-economic and environmental contexts. Similar observations have been documented in studies conducted by Haque et al. (2023) and Sultana et al. (2020), both of which emphasized the interaction between cultural practices and structural inequalities in shaping women's hygiene behavior.

The final and perhaps most policy-relevant finding concerns the need for **culturally sensitive interventions**. Across the survey, case studies, and FGDs, respondents consistently recommended that hygiene promotion programs should respect indigenous traditions while correcting unsupported practices. The participants emphasized the importance of involving mothers-in-law, husbands, religious leaders, community elders, and local health workers in health education rather than focusing exclusively on women. This finding extends previous literature by demonstrating that behavioral change is more likely to succeed when interventions engage the wider social environment in which women practice hygiene. Accordingly, the study strongly supports the ecological approach to public health promotion and confirms Basit (2026) and Castro and Czura (2025)'s recommendations that culturally responsive community engagement is essential for sustainable behavioral change.

Overall, the integrated findings demonstrate strong methodological triangulation across all three evidence sources. The survey established the prevalence and statistical relationships of indigenous hygiene practices; the case studies explained the lived experiences and cultural meanings of women; and the FGDs validated these findings through collective community perspectives. The convergence of these findings enhances the credibility and trustworthiness of the study while confirming that culture, gender relations, family traditions, socioeconomic conditions, and public health systems shape indigenous hygiene practices as a multidimensional phenomenon. Therefore, the study concludes that preserving beneficial indigenous hygiene knowledge while transforming harmful practices through culturally appropriate education represents the most effective pathway for improving women's health and hygiene in rural Bangladesh.

Table 06: Validation of the Study Findings

Major Findings	Survey	Case Studies	FGDs	Theory/Model	Existing Literature	Validation
Indigenous hygiene practices remain an important part of rural women's daily lives, although the level of practice varies across different hygiene dimensions.	☐	☐	☐	Leininger's Theory of Culture Care Diversity and Universality	Haque et al. (2023); Dasgupta and Sarkar (2008)	Accepted
Family traditions, mothers-in-law, and community expectations strongly influence women's hygiene practices after marriage.	☐	☐	☐	Social Ecological Model	Basit (2026); Hasan et al. (2023)	Accepted
Appropriate indigenous hygiene practices are positively associated with women's health and well-being, particularly when combined with safe and evidence-based behaviors.	☐	☐	☐	Leininger's Theory	Castro and Czura (2025)	Partially Accepted (beneficial practices support health, while harmful practices require modification)
Harmful traditional beliefs and cultural restrictions continue to influence some aspects of women's hygiene behavior, reproductive care, and healthcare decisions.	—	☐	☐	Social Ecological Model	Garg et al. (2001); Castro and Czura (2025)	Accepted
Socio-economic conditions, poverty, water and sanitation access, and health education influence women's ability to maintain safe hygiene practices.	☐	☐	☐	Social Ecological Model	Sultana et al. (2020); Haque et al. (2023)	Accepted
Culturally sensitive, community-based hygiene interventions are necessary to strengthen positive indigenous practices and modify harmful behaviors.	—	☐	☐	Both Frameworks	Basit (2026); WHO (2022)	Accepted
Mixed-method evidence demonstrates that indigenous hygiene practices are shaped by the interaction of cultural knowledge, household norms, environmental conditions, and health resources.	☐	☐	☐	Leininger's Theory and Social Ecological Model	Multiple sources	Accepted

The integrated findings demonstrate a strong convergence between quantitative and qualitative evidence, supporting the relevance of the selected theoretical frameworks. The survey findings revealed that indigenous hygiene practices remain embedded within rural women's daily lives, although the intensity and safety of these practices vary considerably across different dimensions. Case studies and FGDs further explained how family traditions, cultural beliefs, economic conditions, and environmental limitations influence women's hygiene decisions after marriage. The findings provide empirical support for Leininger's Culture Care Theory by demonstrating the importance of culturally embedded care practices, while the Social Ecological Model explains how individual, family, community, and structural factors shape hygiene behavior. Therefore, the study confirms that improving women's hygiene in rural Bangladesh requires interventions that preserve beneficial indigenous

knowledge while addressing harmful practices through culturally appropriate health education, community participation, and supportive policy measures.

4.1 Policy Recommendations and Guidelines for Implementation

The findings from the survey (N = 220), case studies (n = 25), FGDs, literature, and theoretical frameworks demonstrate that rural married women's hygiene practices are shaped by **culture, family traditions, socioeconomic conditions, environmental constraints, and access to health information**. Although Bangladesh has made progress in sanitation, maternal health, and water supply, a comprehensive policy specifically addressing women's hygiene across the life course including personal, menstrual, reproductive, and postpartum hygiene and culturally embedded practices remains insufficient. The following recommendations are therefore proposed.

4.1.1. Develop a National Women's Hygiene and Health Promotion Policy

Responsible actors: MoHFW, DGHS, MoWCA, policymakers, development partners.

The government should develop a dedicated **National Women's Hygiene and Health Promotion Policy** using a life-course approach covering adolescent girls, married women, pregnant and postpartum women, and older women. The policy should integrate women's hygiene into primary healthcare, reproductive and maternal health programs and recognize indigenous knowledge by preserving beneficial practices while addressing potentially harmful practices through evidence-based interventions.

4.1.2. Integrate Culturally Sensitive Hygiene Education into Primary Healthcare

Responsible actors: Community clinics, family welfare centers, health assistants, FWAs, NGOs, and community health workers.

Regular hygiene education should address **menstrual and reproductive hygiene, postpartum care, nutrition, sanitation, disease prevention, and safe traditional practices**. Since mothers-in-law and family members strongly influence women's behaviors, education should involve husbands, mothers-in-law, and other household decision-makers. Health workers should use respectful communication that distinguishes beneficial traditions from harmful practices rather than rejecting indigenous knowledge as a whole.

4.1.3. Strengthen Community-Based Women's Hygiene Programs

Responsible actors: Local government, NGOs, women's groups, community-based organizations, and social welfare organizations.

Existing women's groups and village organizations should conduct regular community sessions and small-group discussions on menstruation, postpartum care, reproductive health, and hygiene. **Mothers-in-law, elderly women, community elders, and local leaders** should be included as key change agents. A "community learning rather than community correction" approach can help modify harmful beliefs while maintaining cultural acceptance.

4.1.4. Improve Access to Affordable Hygiene Materials and WASH Facilities

Responsible actors: Government agencies, local government, NGOs, private sector, social enterprises, and development partners.

Programs should improve access to **affordable sanitary materials, soap, clean water, and safe sanitation facilities**, particularly for low-income households and pregnant and postpartum women. Rural sanitation facilities should provide privacy, safety, adequate water, and appropriate menstrual hygiene facilities.

4.1.5. Expand Digital and Community Health Communication

Responsible actors: Government communication agencies, NGOs, digital health platforms, youth organizations, and community influencers.

Culturally appropriate information should be disseminated through **Facebook, mobile applications, videos, messaging groups, and local-language materials**. Campaigns should address misconceptions surrounding menstruation, childbirth, reproductive hygiene, and traditional remedies while promoting safe and beneficial indigenous practices.

4.1.6. Develop Training for Health Providers and Community Leaders

Responsible actors: MoHFW, medical and nursing institutions, universities, NGOs, and research organizations.

Doctors, nurses, community health workers, social workers, and local leaders should receive training in **culturally competent hygiene promotion**. Universities can develop interdisciplinary training modules incorporating public health, social welfare, gender studies, anthropology, and indigenous knowledge.

4.1.7. Strengthen Research, Monitoring, and Evidence-Based Policy

Responsible actors: Universities, research institutes, BBS, BMRC, NGOs, and international research organizations.

Further **longitudinal, community-based, and intervention research** should examine regional variations and health effects of indigenous practices. A national database of women's hygiene indicators would support planning, monitoring, and policy evaluation.

4.1.8. Establish Multi-Stakeholder Collaboration

Responsible actors: Government, NGOs, INGOs, universities, private sector, community organizations, and women's networks.

A coordinated mechanism should connect policy, implementation, research, and community participation. Government should provide leadership and resources; NGOs/INGOs should support implementation; universities should generate evidence and evaluate programs; private organizations should develop affordable solutions; and communities should ensure local ownership. This integrated approach can strengthen women's hygiene, health, gender equality, social protection, and sustainable development.

4.2 Study Alignment with National Policies, Programs, International Frameworks, and Development Priorities

This study closely aligns with Bangladesh's national development priorities, particularly those related to women's health, sanitation, gender equality, and social development. The findings support the National Health Policy of Bangladesh (2011), which emphasizes universal access to healthcare, preventive health services, maternal and reproductive health improvement, and community-based health promotion. The study also contributes to the goals of the National Strategy for Water Supply and Sanitation (2014) and the National Sanitation Strategy (2020) by highlighting the importance of women-centered hygiene promotion beyond infrastructure development. Furthermore, the study aligns with the National Women's Development Policy (2011) by addressing women's dignity, health rights, empowerment, and gender-based barriers affecting access to essential services. The recommendations are relevant to the programs of the Ministry of Health and Family Welfare (MoHFW), Directorate General of Health Services (DGHS), Directorate General of Family Planning (DGFP), and Ministry of Women and Children Affairs (MoWCA) by providing evidence for integrating CSE into primary healthcare, reproductive health services, and community health interventions.

At the international level, this study directly contributes to the achievement of the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being) by improving women's hygiene and preventing health risks, SDG 5 (Gender Equality) by strengthening women's health rights and decision-making capacity, and SDG 6 (Clean Water and Sanitation) by emphasizing safe hygiene behavior and sanitation access. The study also reflects the principles of the WHO Guidelines on Hand Hygiene, Water, Sanitation, and Hygiene, which recognize hygiene as a critical determinant of health and human dignity. The findings can support the work of national and international development partners such as UNICEF, UNFPA, WHO, World Bank, BRAC, and other NGOs engaged in maternal health, WASH, and women empowerment programs. This study provides a policy foundation for designing inclusive, culturally appropriate, and sustainable women's hygiene interventions in rural Bangladesh by connecting indigenous knowledge with evidence-based health practices.

The findings of this study established that that a shift from a facility-based sanitation approach to a culturally informed women-centered hygiene development approach is required to improve women's hygiene in rural Bangladesh. Policies should recognize rural women not only as beneficiaries of health programs but also as holders of valuable indigenous knowledge. A balanced approach that preserves beneficial traditions, transforms harmful practices, strengthens women's agency, and ensures access to healthcare and sanitation facilities can significantly improve women's health, dignity, and overall well-being in Bangladesh.

Conflict of interest

The authors declare no conflict of interest.

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