

Women's Access to Water, Sanitation and Hygiene (WASH) Facilities in Higher Education Institutions: A Study in the Context of SDG 6

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Abstract: Access to safe drinking water, adequate sanitation, and proper hygiene is essential for promoting health, dignity, and inclusive education. This study examines women's access to Water, Sanitation and Hygiene (WASH) facilities in Higher Education Institutions (HEIs) in Lucknow, Uttar Pradesh, in the context of SDG 6. The study adopts a descriptive and exploratory research design based on primary data collected through a structured online questionnaire from 80 female undergraduate and postgraduate students between 16 May and 30 June 2026. Data were analyzed using descriptive statistics, including frequencies and percentages. The findings reveal considerable concerns regarding drinking-water quality, washroom cleanliness, adequacy of sanitation facilities, and the availability of essential hygiene supplies and menstrual waste disposal facilities. Furthermore, 55% of respondents reported always or often avoiding drinking water to reduce washroom use. Menstrual hygiene-related difficulties also affected institutional participation, while respondents reported emotional distress, discomfort, and disruptions to academic and social activities. Additionally, 65% agreed or strongly agreed that their WASH-related concerns were ignored by institutional authorities. The study highlights the need for gender-sensitive campus infrastructure, regular maintenance, and improved institutional accountability to advance SDG 6 and promote dignified, inclusive, and supportive learning environments for women.

Keywords : *Water, Sanitation and Hygiene, WASH, Higher Education Institutions, Women Students, Menstrual Hygiene Management (MHM), SDG 6.*

INTRODUCTION

Access to safe water, adequate sanitation and proper hygiene (WASH) is a basic human necessity and an important condition for maintaining health, dignity and well-being. These facilities become particularly significant in educational institutions, where students spend a considerable part of their daily lives. Although higher education institutions are primarily established to provide learning opportunities and promote academic development, the quality of the campus environment also influences students' everyday experiences. The availability of clean drinking water, hygienic washrooms, handwashing facilities and appropriate menstrual hygiene management facilities is therefore an essential component of an inclusive and supportive educational environment. However, the presence of these facilities does not necessarily guarantee that students can access and use them comfortably, safely and regularly.

Water, Sanitation and Hygiene, commonly known as WASH, has gained considerable importance during the global development discussions, particularly in relation to public health, gender equality and sustainable development. The UN Sustainable Development Goals (SDGs), adopted in 2015, recognize access to safe water and sanitation as a fundamental requirement for sustainable and inclusive societies. Specifically, Sustainable Development Goal 6 (SDG 6) aims to ensure the availability and sustainable management of water and sanitation for all. While the goal addresses access to water and sanitation at a broader societal level, its relevance extends to educational institutions, where adequate WASH facilities are necessary to create healthy, accessible and dignified learning environments. Achieving the objectives of SDG 6 consequently requires attention not only to the provision of infrastructure but also to its quality, usability, accessibility and maintenance.

Women's access to WASH facilities in higher education institutions deserves particular attention because their needs and experiences may differ from those of male students. Access to clean and functional washrooms, reliable water supplies, soap, hygienic disposal facilities and menstrual hygiene management resources can influence women's comfort and confidence throughout the academic day. When these facilities are inadequate, women may experience inconvenience, discomfort and concerns about privacy and personal hygiene. In some circumstances, the absence of suitable facilities may also influence their daily routines, including water consumption, washroom use and participation in campus activities. Such experiences highlight the importance of understanding WASH access not merely as an infrastructural issue but also as a question of gender-sensitive educational provision. Menstrual hygiene management is an especially important dimension of this discussion. Female students require appropriate facilities that allow them to manage menstruation safely, hygienically and with dignity while attending classes and participating in other academic activities. The availability of water, clean toilets, disposal bins and suitable menstrual hygiene resources can help create a more supportive campus environment. Conversely, inadequate facilities may increase the practical difficulties associated with menstruation and contribute to feelings of discomfort or embarrassment. These concerns underline the need for higher education institutions to consider women's specific requirements while planning, maintaining and evaluating campus WASH infrastructure.

The significance of WASH facilities also extends beyond physical health and hygiene. The condition of campus facilities may shape students' sense of comfort, security, dignity and belonging within an educational institution. For women, difficulties in accessing drinking water or usable washrooms may interfere with everyday academic routines and potentially affect their concentration, classroom participation and social interactions. However, the relationship between WASH access and students' experiences should not be assumed to be uniform. It may vary according to the quality of infrastructure, the frequency of maintenance, the availability of essential supplies and the extent to which institutions respond to students' needs. Examining these experiences can therefore provide a more comprehensive understanding of the role that basic campus facilities play in supporting women's participation in higher education.

In India, the expansion of higher education has increased the importance of ensuring that educational institutions provide facilities that respond to the diverse needs of their student populations. Enrolment and access to education are important measures of educational progress, but meaningful participation also depends on the conditions in which students study. The availability of functional and hygienic WASH facilities is one such condition. Despite its practical significance, WASH provision may receive less attention in discussions of higher education than issues such as enrolment, academic performance, institutional rankings and employment outcomes. A gender-sensitive examination of campus facilities can help bring attention to the everyday infrastructural challenges that may otherwise remain overlooked.

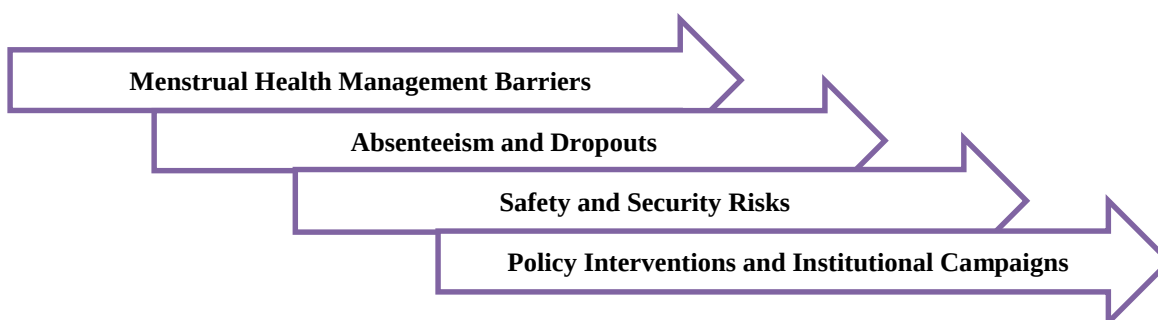
Against this background, the present study examines women's access to Water, Sanitation and Hygiene (WASH) facilities in higher education institutions in the context of SDG 6. It focuses on the availability and accessibility of essential facilities, including drinking water, sanitation, handwashing and menstrual hygiene management, while considering women students' experiences and perceptions of their adequacy. By exploring these dimensions, the study seeks to understand whether the facilities available within higher education institutions adequately respond to women's needs and support a comfortable and inclusive learning environment. The study also situates these concerns within the broader objective of achieving safe water and sanitation for all, as envisaged under SDG 6.

The study is significant because it draws attention to the relationship between sustainable development commitments and the everyday realities of women students on campus. Its focus goes beyond the simple presence or absence of infrastructure to consider whether available facilities are accessible, functional and responsive to women's needs. The findings may help identify areas requiring institutional attention and contribute to discussions on gender-sensitive campus planning, student well-being and the implementation of SDG 6 in higher education. Ultimately, ensuring adequate WASH facilities should be regarded not as an additional institutional convenience but as an essential element of a healthy, dignified and inclusive educational environment.

2. Literature Review

The United Nations General Assembly Resolution formally recognized safe drinking water and sanitation as a fundamental human right essential for the full realization of all human rights (Ghosh et al., 2022). Goyanka (2021) within the Sustainable Development Agenda 2030, Sustainable Development Goal 6 (SDG 6) aims to ensure the availability and sustainable management of water and sanitation for all. Specifically, SDG Target 6.2 mandates universal, adequate, and equitable access to sanitation and hygiene, with explicit emphasis on giving due attention to the needs of women and girls and those in vulnerable situations. Ranjan (2025) public health and development literature establishes that SDG 6 is inextricably linked to SDG 4 (Quality Education), SDG 3 (Good Health and Well-Being), and SDG 5 (Gender Equality). Adequate Water, Sanitation, and Hygiene (WASH) infrastructure serves as a core determinant of educational retention, dignity, and gender equity. However, water scarcity and climate-induced water crises disproportionately burden women and girls, who bear the primary social and biological responsibility for water-related domestic labor, personal hygiene, and reproductive health management. Despite global commitments, mainstream water resource management and institutional planning have historically operated under a "gender-blind" paradigm, failing to collect sex-disaggregated data or incorporate intersectional feminist frameworks into policy design. Sclar et al., (2018) express that the vast majority of institutional WASH research over the past two decades has concentrated on primary and secondary school environments. Empirical studies across low- and middle-income countries (LMICs) consistently demonstrate that inadequate school WASH facilities act as a primary driver of educational inequality for female students.

Key findings across school-level literature include:



- *Menstrual Health Management Barriers*: The absence of clean, private, and gender-segregated latrines, functional waste disposal systems (such as incinerators or covered bins), and continuous running water creates severe psychological stress, fear of menstrual staining, and embarrassment among adolescent girls (Sclar et al., 2018).

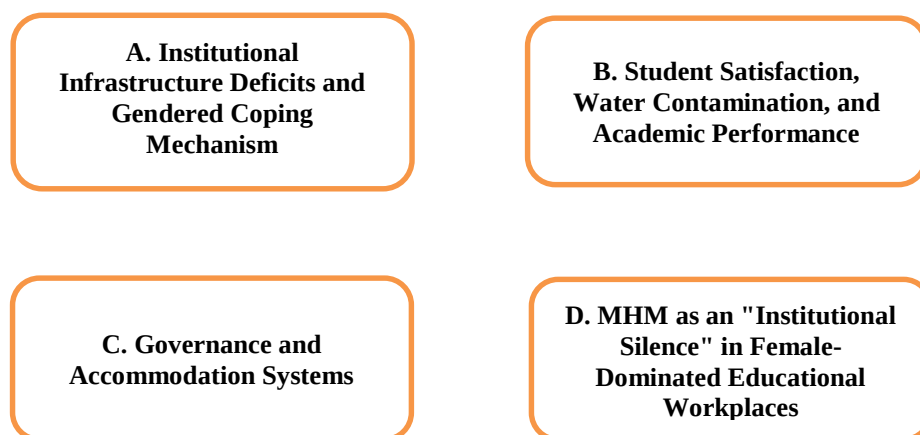
- *Absenteeism and Dropouts*: Quantitative and longitudinal evaluations show that girls routinely miss school during their menses or drop out entirely post-puberty when schools lack functional sanitation and privacy. Conversely, providing gender-segregated

toilets and a reliable water supply significantly catalyzes female school enrollment and reduces dropout rates (Bikram & Mishra, 2022).

- **Safety and Security Risks:** Inadequate sanitation facilities expose schoolgirls to verbal harassment, privacy breaches, and sexual coercion from peers or outsiders, forcing female students to adopt unsafe coping mechanisms such as going in pairs or avoiding facility use entirely.

- **Policy Interventions and Institutional Campaigns:** Initiatives such as the Swachh Bharat Swachh Vidyalaya campaign in India, the Three Star Approach (TSA) in Central Asia, and the WHO/UNICEF Health-Promoting Schools framework have established national guidelines for school-based handwashing stations, MHM education, and minimum student-to-latrine ratios. Comparative studies between public and private primary/secondary schools reveal persistent disparities, where non-government institutions consistently maintain superior WASH knowledge, attitudes, and functional infrastructure compared to resource-constrained public schools (Edward Augustine Magwe, 2024).

While policy frameworks and academic literature have focused heavily on primary and secondary education, Higher Education Institutions (HEIs) present a distinct, yet under-researched, institutional context. Over the past two decades, student enrollment in universities across India has expanded dramatically, with female enrollment rising significantly. However, campus infrastructure and environmental health services have failed to keep pace with demographic expansion. Recent empirical studies examining university campuses highlight critical WASH vulnerabilities:



A. Institutional Infrastructure Deficits and Gendered Coping Mechanisms: An in-depth qualitative study utilizing the Integrated Behavioral Model for Water, Sanitation, and Hygiene (IBM-WASH) at a major Bangladeshi public university revealed that while female university students possess high individual health awareness, campus sanitation systems are severely degraded. Academic buildings and residential halls suffered from acute shortages of female-designated toilets, frequent water cuts, absent soap, zero emergency sanitary pad provision, and a complete lack of menstrual waste disposal facilities. Consequently, female university students were forced to adopt severe behavioral coping strategies, including holding urine for extended hours, restricting daily fluid intake (inducing dehydration risks), or missing lectures to return to off-campus accommodations.

B. Student Satisfaction, Water Contamination, and Academic Performance: An assessment across public and private universities in Pakistan demonstrated that 85.7% of point-of-use drinking water samples on university campuses were microbiologically contaminated, while 95% of campus handwashing stations lacked soap or drying materials. Statistical analysis confirmed a highly significant correlation ($p < 0.05$) between toilet functionality, water quality, handwashing availability, and overall student academic performance and retention. Post-COVID-19 evaluations in university settings further indicate that campus handwashing stations established during the pandemic were subsequently dismantled, leaving female students and students with disabilities (SWDs) facing severe toilet inaccessibility and health.

C. Governance and Accommodation Systems: Research at the University of Cape Coast, Ghana, comparing university-managed residential halls against private off-campus hostels demonstrated that multi-tenant student housing creates severe WASH service performance alterations. Shared toilet ratios, external facility placements, inconsistent cleaning schedules, and poor waste management created heightened perceived health risks, compromising female students' safety, privacy, and living conditions.

D. MHM as an "Institutional Silence" in Female-Dominated Educational Workplaces: Literature examining female professionals in educational institutions (e.g., millennial teachers in Jammu and Kashmir, India) reveals that Menstrual Health and Hygiene (MHH) is treated as an "institutional silence" and a private burden rather than an organizational responsibility. Female students & educators navigating long workdays and rigid class schedules faced non-functional incinerators, lack of disposal bins, and privacy deficits, forcing them to carry used products home or restrict water intake. Furthermore, critical organizational literature on higher education (Crimmins et al., 2026) demonstrates how universities engage in "gender-washing" using formal gender equity charters (e.g., Athena Swan) for institutional reputation while underlying patriarchal gender schemas, unequal academic housework allocation, and microaggressions sustain everyday gender inequality.

3. Methodology

This study adopts a descriptive and exploratory research design to understand women's access to water, sanitation, and hygiene (WASH) facilities in higher education institutions (HEIs). It also examines its importance in achieving SDG 6 in higher education. Primary data were collected between 16 May and 30 June 2026 using a self-administered, structured online questionnaire created via Google Forms, which was informed by an extensive literature review. The survey was conducted from 16 May to 30 June 2026, among Undergraduate (UG) and Postgraduate (PG) female students enrolled in HEIs in Lucknow, Uttar Pradesh. A non-probability purposive sampling technique was employed due to time and resource constraints, and only female students were included in the study (Cookey et al., 2023). The questionnaire comprised socio-demographic characteristics, WASH facilities assessment, daily life experience, Menstrual hygiene management (MHM), and mental and emotional well-being. The collected data were analyzed using Microsoft Excel, and descriptive statistics, including frequencies, percentages, and graphical representations, were used to interpret the findings in this study.

4. Results

Table.1: Socio-demographic Profile of Respondents

Basis	Description	Frequency	%
Gender	Female	80	100
Age	18 - 21	26	33
	22 - 25	52	65
	26 - 35	2	3
Type of Institution	Government	70	88
	Private	9	11
	Semi private	1	1
Current Level	Postgraduate Student	63	79
	Undergraduate Student	17	21
Total		80	100

Table 1. The socio-demographic profile of the 80 female students who participated in the study. Regarding age composition, the majority of respondents (65%) belonged to the 22–25 years age group, followed by 33% aged 18–21 years, while approximately 3% were between 26–35 years. Looking into the terms of institutional background, 88% of respondents were enrolled in government institutions, 11% in private institutions, and 1% in semi-private institutions. This distribution indicates that the study primarily captures the experiences of female students studying in government higher education institutions (HEIs). Also, in terms of their current level of their education, postgraduate students constituted 79% of the sample, while undergraduate students accounted for 21%. The high proportion of postgraduate students and respondents from government institutions provides the context for interpreting the subsequent findings on access to water, sanitation, and hygiene (WASH) facilities. In relation to Sustainable Development Goal 6 (SDG 6), understanding this profile helps contextualize students' reported experiences of drinking-water availability, sanitation facilities, menstrual hygiene management, and well-being.

4.1. WASH facilities assessment

The results show that majority of institutions have drinking water supply and sources within their campus, through the tap water, water cooler/filters and also the Bottled/ packaged water but the majority prefer to drink through Water Coolers/ Filters (89%) followed by 11% who choose tap water because of their accessibility and reliability and 5 % of section pick to purchase the water (Package) bottles within the campus.

Table 2: The major issue with drinking water

Basis	Frequency	%
Color	3	4
Hardness	12	15
Taste	48	60
Smell	11	14
Temperature	2	3
Unavailability	1	1
Nothing	3	4
Total	80	100

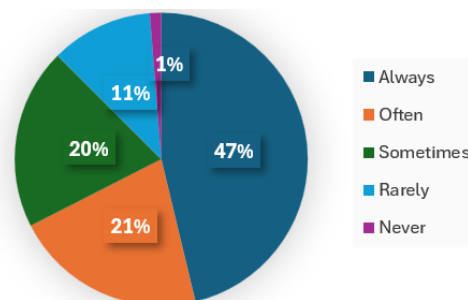


Fig.1

Table.2 presents the major issues allied with drinking water within the campus reported by the respondents. Taste emerged as the prime concern, 60% of students, followed by hardness (15%) and smell (14%). Color was identified as an issue by 4% of respondents, while 3% reported problems with water temperature. Unavailability was reported by 1%, indicating that few had difficulty providing suitable drinking sources, whereas 4% indicated no issues with drinking water. These findings suggest that water quality, particularly taste, is a prominent concern among the respondents. In the context of SDG 6, the results highlight the importance of ensuring not only the availability of drinking water but also its acceptability and quality within higher education institutions. Also, Fig. 1 shows that 47% of respondents always and 21% often face issues with drinking water, accounting for 68%

of the total. Only 1% never experience such issues, highlighting the prevalence of drinking-water concerns among female students in higher education institutions, and the relevant authorities must address this matter with the utmost urgency.

The findings about washroom, sanitation, and hygiene facilities reveal that 96% of female students reported the availability of separate female washrooms. The findings also indicate that 49% rated washroom cleanliness and usability as poor or very poor, while only 25% rated them as good or excellent. The hygiene facilities reveal that 37.5% of respondents reported that none of the list hygiene facilities were available, while 20% reported access to handwash/soap alone. Overall, the results indicate gaps in the availability of essential hygiene facilities, particularly soap, handwash, sanitary napkin vending machines, and menstrual waste disposal facilities. Moreover, 26% considered the condition average, reflecting concerns about washroom maintenance. The results indicate that 44% of female students rated washroom adequacy as poor or very poor, while 30% considered it average and only 26% rated it good or excellent. Overall, the results highlight the need to improve washroom cleanliness, usability, availability, and essential hygiene facilities for female students in their institutions.

4.2. Daily Life Experience

The findings unveiled the daily experiences of women regarding water, sanitation, and hygiene facilities on campus. The 65% of female students always carried their own water, tissues, or sanitizer due to a lack of trust in campus facilities, while 15% did so often and 13% sometimes. The results revealed that 34% always and 21% often deliberately avoided drinking water to reduce the need to use campus washrooms, indicating a potential impact of inadequate facilities on hydration habits. Regarding feeling & confidence, 39% of respondents tried to avoid using campus washrooms, while 29% reported being mostly comfortable and 15% indicated discomfort or anxiety, reflecting varied levels of comfort. Additionally, 43% experienced waiting-related difficulties often or very often because washrooms were unusable or occupied, while 28% encountered this sometimes. Lastly, the major concerns about campus washrooms are lack of hygiene and cleanliness (28%), inadequate water supply (11%), lack of cleanliness (46%), poor accessibility and lack of privacy (5%), and foul odor (10%). Overall, these findings suggest that concerns regarding cleanliness, water availability, privacy, and usability influence women's everyday campus experiences and may affect their comfort, hydration practices, and well-being.

4.3. Menstrual Health Management (MHM)

The findings reveal significant challenges faced by women in managing menstrual health and hygiene within institutional settings. Regarding attendance, 33% of respondents reported skipping attendance or leaving early due to inadequate menstrual hygiene facilities more than once, while 53% experienced this sometimes. Only 15% had never faced such situations, indicating that inadequate facilities may disrupt regular institutional participation. The availability of menstrual hygiene materials and sanitary waste disposal facilities was also a major concern. Approximately 59% rated these facilities as poor (33%) or very poor/unavailable (26%), while only 14% considered them good or excellent. The remaining 28% rated their availability as average. Furthermore, managing menstruation within the institution was challenging for many respondents: 23% described the experience as very stressful, 21% as difficult, and 36% as manageable with effort. Only 20% reported an easy or very easy and comfortable experience. Overall, these findings highlight the need for accessible menstrual hygiene materials, adequate disposal facilities, and supportive institutional infrastructure to ensure women's dignity, comfort, and uninterrupted educational participation.

4.4. Mental & Emotional Well-being

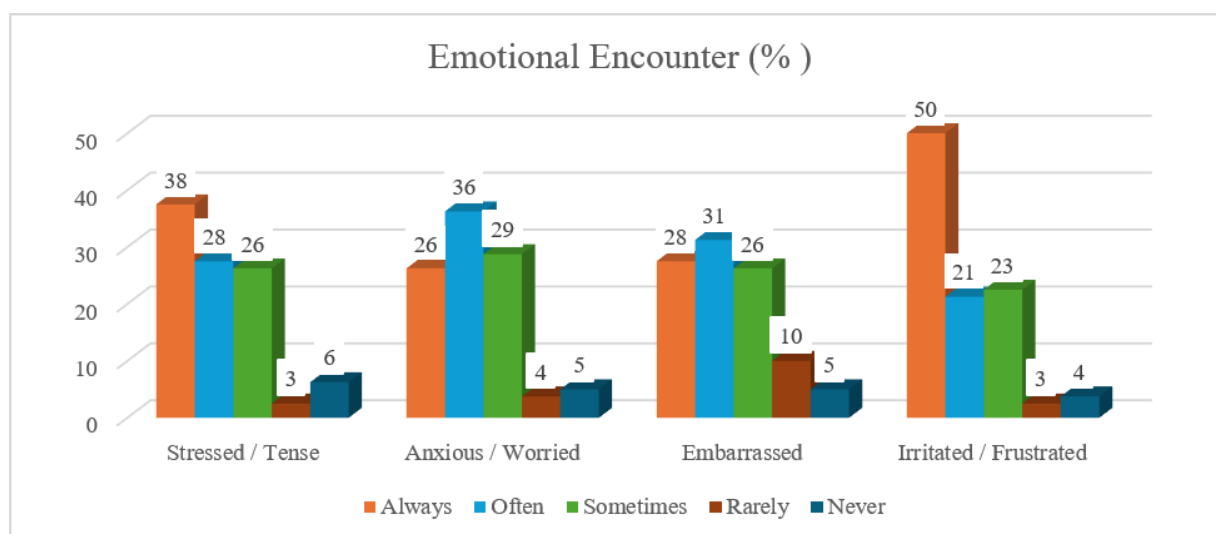


Fig.2

Fig. 2 indicates that poor WASH (Water, Sanitation and Hygiene) conditions are associated with considerable emotional distress and disruptions to the daily academic and social experiences of women respondents. Regarding emotional responses, irritation and frustration were most frequently reported, with 50% always and 21% often experiencing these feelings. Stress and tension were always experienced by 38% of respondents, while 36% often felt anxious or worried. Additionally, 31% often felt embarrassed, suggesting that inadequate washroom facilities may undermine emotional comfort and dignity.

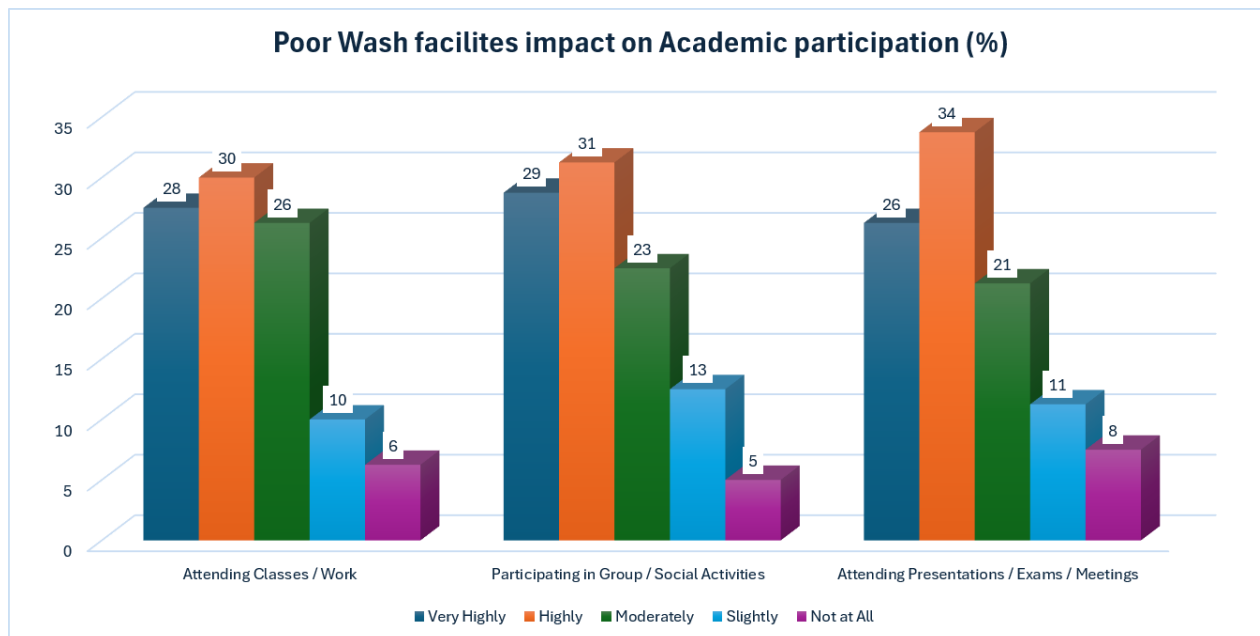


Fig.3

Fig.3 reveals, during menstruation, poor WASH conditions substantially affected participation in academic and social activities. Approximately 58% reported highly or very highly affected attendance in classes or work, while 60% experienced similar effects on group and social activities. The corresponding proportion for presentations, examinations, and meetings was 60%, indicating that inadequate facilities may create barriers to active participation.

Furthermore, WASH-related issues affected overall mood and concentration always for 26% and often for 28% of respondents, while 34% reported occasional effects. Institutional responsiveness also emerged as a concern: 65% agreed or strongly agreed that their WASH-related concerns were ignored by institutional administration authorities. Overall, these findings highlight the importance of hygienic, accessible, and menstruation-responsive facilities in promoting emotional well-being, dignity, concentration, and equitable participation in higher education institutions.

5. Conclusion

The present study examined women's access to Water, Sanitation and Hygiene (WASH) facilities in higher education institutions (HEIs) in Lucknow, Uttar Pradesh, in the context of Sustainable Development Goal 6 (SDG 6). The findings reveal that the availability & accessibility of basic infrastructure does not necessarily ensure its adequacy, usability, or responsiveness to women's needs. Despite the reported availability of separate female washrooms and drinking-water sources, concerns regarding water quality, washroom cleanliness, inadequate hygiene supplies, and menstrual waste disposal remain significant. The study further highlights how inadequate WASH facilities influence women's everyday campus experiences. Avoiding drinking water, carrying personal hygiene supplies, experiencing discomfort while using washrooms, and facing difficulties in managing menstruation indicate that infrastructural deficiencies may affect students' comfort and participation. The reported emotional distress and disruptions to academic and social activities further emphasize the importance of gender-sensitive campus facilities.

In conclusion, achieving SDG 6 within higher education institutions requires moving beyond the provision of infrastructure towards ensuring safe, clean, accessible, and well-maintained facilities. Institutions should prioritize regular maintenance, reliable drinking-water quality, adequate handwashing facilities, menstrual hygiene resources, and appropriate waste disposal systems. The administration should focus on establishing student feedback mechanisms, and subsequently, institutional accountability can further strengthen these efforts. Although the study is limited to a purposively selected sample in Lucknow, it highlights the need for broader research and institutional action to ensure that women can pursue higher education with dignity, comfort, and equal opportunities.

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