

# Menstrual Hygiene Practices in Higher Education Institutions in Uttarakhand

Lakshita Pant & Shrinkhala Upadhyaya

## Abstract

Menstruation is a normal physiological process that females begin to experience at the onset of puberty, signifying their potential to procreate. Learning to regulate one's menstrual health and cleanliness is crucial for the physical, mental, and social well-being of those who menstruate, as it guarantees that females have a standard chain of menstruation. However, poor menstrual hygiene continues to be a significant problem, especially in areas with few resources and developing nations. Social stigmas, ignorance, and limited access to resources frequently hinder the adoption of good menstruation habits. This study investigates the applicability and promise of the behavioural economics method known as "nudge theory" to enhance menstrual hygiene habits among college students. Furthermore, the paper explores the role of institutional policies, infrastructure, and collaborative efforts between university administrations, student organizations, and healthcare providers in creating a supportive environment for menstrual health and hygiene. By drawing on the principles of nudge theory, this paper aims to provide guidelines for creating a framework to develop innovative and practical strategies that will result in improved menstrual hygiene practices and ultimately empower young women in higher educational settings in India.

**Keywords:** Higher Education; Menstrual Hygiene; Menstruation; Nudge Theory; Strategies.

## Introduction

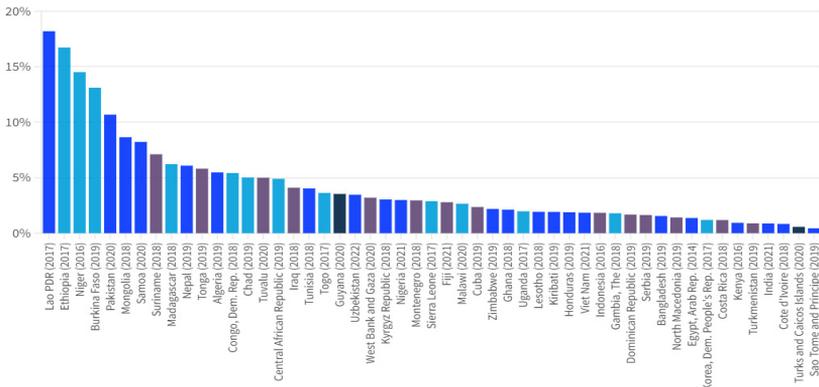
Menstruation, also known as the menstruation cycle and commonly stated as periods, is a natural experience that millions of girls experience during the early days of their adolescence. Menstruation occurs every 21 to 35 days and lasts 2 to 7 days. During the early years or start of the period

cycle, adolescent girls experience long cycles due to the changes occurring in the body (Mayo Clinic). “Every month, 1.8 billion people across the world menstruate. Millions of these girls, women, transgender men, and non-binary persons are unable to manage their menstrual cycle in a dignified, healthy way” (UNICEF). Menstruation is a biological phenomenon that is different for every girl experiencing it; the practices and beliefs related to menstruation vary from person to person. Symptoms including cramps, bloating, acne, fatigue, mood swings, and sore breasts are common amongst women who experience the cycle of menstruation. To tackle these signs and problems related to menstruation, training and enlightening women about the significance of the menstruation cycle at a very early age is essential. Although it is believed that young adolescents and women worldwide need education regarding menstrual health and hygiene MHM (World Bank Group), there are many countries where menstruation is considered a topic of silence. Additionally, as seen below in Fig. 1, the ratio of women and girls who did not use appropriate menstrual materials is displayed from 2014 to 2022. This survey data also explains that 5 out of 51 countries, which means almost 10% of women in low-income countries, cannot use proper menstrual material (Kashiwase).

**In five out of 51 countries, more than 10% of women can't access proper menstrual materials**

Women and girls who don't use appropriate menstrual materials, by income groups, most recent value in 2014-2022 (% of women and girls ages 15-49 who had a menstrual period within the last year)

Income groups are denoted within the country as follows: light blue for low income, blue for lower-middle income, purple for upper-middle income, and navy for high income.



Source: WHO/UNICEF JMP for Water Supply, Sanitation and Hygiene, Gender database • The data is calculated as follows: 100-SG.MHG.UMDP.ZS.

**Fig.1: Kashiwase, Haruna. Observing World Menstrual Hygiene Day: Understanding the Struggles Through Data (2024). World Bank Blogs.**

Despite the countries that require special attention and focus on menstruation health and hygiene, countries like Zambia, Taiwan, South Korea, the Philippines, Spain, Indonesia, Japan, and Vietnam are working for a more significant cause of menstruation by providing paid leave to menstruating women (Masih). The countries with policy-level initiatives, mass media (print, electronic, digital), and organizations such as UNICEF, WHO, UN Women, WASH United, and many more are driving positive change makers of menstruation as they were victorious in emphasizing issues and covering new dimensions around menstruation health and hygiene. In 2012, the WHO/UNICEF Joint Monitoring Programme defined menstrual health management as “Women and adolescent girls are using a clean menstrual management material to absorb or collect menstrual blood, that can be changed in privacy as often as necessary, using soap and water for washing the body as required, and having access to safe and convenient facilities to dispose of used menstrual management materials. They understand the basic facts of the menstrual cycle and how to manage it with dignity and without discomfort or fear” (UNICEF 13).

Topics like the concept of using sustainable menstrual material, issues of period poverty, disposal of menstrual material, installation of pad self-service vending machines in rural as well as urban populations, entrepreneurship opportunities for local or rural people in pad-making companies, and many more are subjects which have been introduced in recent times because of the availability of diverse campaigns and endeavors taking place to lift the grasp concerning menstrual health and hygiene. According to UNICEF, in low-income nations, about half of the academies lack the appropriate drinking water, sanitation, and hygiene that female tutors and girls need to manage their menstruation. Girls may have adverse effects from insufficient facilities, including missing class when they are menstruating.

Adolescent females must have access to clean, safe restrooms with running water in every school and college. For young teenage girls, the first cycle of menstruation, also known as menarche, plays a vital role (World Bank Group). Menarche usually emerges between the ages of 10 and 16, with a median age beginning from 12.4 years (Marques et al.2). During these years, it is very critical to enlighten girls concerning menstruation as it approaches different experiences, causing a change in their psychological, emotional, and physical surroundings. In some parts of India, the beginning of menarche is accompanied by silence, stigma, and scant guidance, aggravating the confusion and anxiety endured by adolescent females throughout this transition.

According to the research of Garg and Anand (184), just mentioning the matter of menstruation in India has always been taboo, and even today, cultural and social pressures impede the progress of information about the subject. Moreover, in many territories of India, menstruation is assumed to be dirty and polluted, and girls living in both rural and urban areas are restricted from entering the kitchen and from performing “puja” during their menstruation. Another research study, as per Mohammed and Larsen-Reindorf (2-3), holding restrictions for adolescents during the time of their menstruation can hurt their mental awareness. These culturally mandated restrictions alienate young girls and impede their access to vital information, making it crucial to eliminate this obstacle through educational experiences. Educating young females about menstrual health and hygiene is becoming highly important in India. Education can assist in shattering the hindrances of embarrassment and secretiveness encircling menstrual health by encouraging genuine and factual discussions. This can cultivate more inclusive and validating surroundings for individuals to govern their menstrual cycles without apprehension or stigma (CRY).

The study of Van Eijk et al. (8), which was mainly applied to young teenagers, examined one hundred thirty-eight studies to understand menstrual hygiene management (MHM) within adolescent girls in India to meet their needs. During their research, they also found that a handful of girls did not attend school during their menstruation. The relationship of absence from school had a very different relationship with the incidence of pad use, but absence due to menstruation did not change over time. However, the transition to higher education does not necessarily mitigate these issues. Young women in higher education areas, such as colleges and universities, at times encounter menstrual taboos, insufficient infrastructure, and a shortage of institutional support, which can negatively influence their attendance, interaction, and mental health. The attainment of higher education correlates with improved health and well-being for individuals, families, and communities while benefiting the economy in which people are employed (Bonnie et al.).

Hence, to understand these issues to the core and follow the best behaviours related to MHM, young females and girls need to gain menstrual-related education during the early years as well as throughout various stages of their lives. Awareness related to menstrual health and hygiene will only extend once adolescent girls are educated and they are learning from a healthy environment. While educating and teaching girls the importance of menstruation, it is also imperative that they follow healthy

menstruation practices themselves and encourage other females around them. Keeping these pointers in mind for this research study, researchers have focused on exploring the nudge theory in the context of the importance of higher education in menstrual health and hygiene.

This study examines how nudge theory influences behaviors and supports behavior change, especially in the context of menstrual hygiene. American behavioral scientists Richard H. Thaler and Cass R. Sunstein gave the idea of nudge theory in their 2008 textbook titled "*Nudge: Improving Decisions About Health, Wealth, and Happiness.*" The theory focuses on changing people's beliefs, decisions, and behavior by adjusting the environment in which decisions are made. Nudge theory suggests making one's desired selections stand out, modifying how differences are shown. The premise behind the nudge hypothesis is that the way options are presented to us affects our decisions (Olmstead). Hence, in this study, researchers are exploring the dimension of nudge theory in the context of menstruation and understanding. In addition, exploring nudge theory, as a crucial behavioral change theory, can be a beneficial tool in improving menstrual health and hygiene practices among students in higher education institutions in India. The researchers interviewed young adolescent females in Udham Singh Nagar, Uttarakhand to explore this query more comprehensively.

## **1. Menstrual Health and Hygiene: Discourging the Global Challenge**

Menstrual health and hygiene are essential but often disregarded components of global development and health. To manage their menstrual cycles with dignity and safety, millions of women and girls face tremendous challenges, especially in low- and middle-income countries. The global menstrual health epidemic is exacerbated by stigma, socioeconomic inequality, and restricted access to infrastructure and necessary resources (Boyers et al. 2; Rossouw and Ross 1). Poor women and girls sometimes lack the appropriate credentials to practically regulate their menses with essential aids like affordable sanitary goods and safe, isolated facilities (Boyers et al.14; Rossouw and Ross 12). This can lead to unfavorable health consequences, including reproductive tract infections, and aggravate existing socioeconomic vulnerabilities. Furthermore, the stigma surrounding menses can deter open dialogue and acceptable support, perpetuating the marginalization of those who menstruate (Sommer et al.1303).

Deficient menstrual hygiene management not only endangers the health and well-being of women and girls but also has broader societal significance. Limited access to safe and hygienic menstrual products, insuffi-

cient knowledge around menstrual health, and relentless social stigma encircling menstruation can have severe repercussions on the health and well-being of adolescent girls and women (Chothe et al.2; Kuhlmann et al. 357; Şahin et al. 265). This challenge is especially imperative in India, where a considerable portion of the population lives in rural areas with limited access to aid. To address this problem, policymakers and public health professionals have enforced diverse interventions, such as enhancing access to hygienic napkins, elevating health education, and gender-friendly infrastructure in schools and communities. However, these customary approaches have had limited success, as they frequently forget to handle the underlying social and behavioral factors influencing menstrual hygiene practices. Menstrual-related challenges can impede girls' school attendance and performance, as well as women's participation in the workforce, ultimately sabotaging progress toward gender equality and sustainable development (Sommer et al. 2). Addressing this global challenge requires a multifaceted strategy. Improving access to inexpensive and high-quality menstrual products, providing comprehensive menstrual health education, and ensuring the availability of safe, clean, and personal water, sanitation, and hygiene facilities are paramount. Simultaneously, measures to destigmatize menstruation and empower women and girls to supervise their menstrual health with conviction and elegance are essential.

By prioritizing menstrual health and hygiene as a public health issue and incorporating it into broader development and gender equality initiatives, it is possible to work towards a world where all individuals can manage their menstruation comfortably, safely, and without shame (Babbar et al. e10) . One of the primary challenges is the restricted availability and affordability of sanitary products. In many regions, the cost of commercially produced pads and tampons is prohibitively high, forcing women and girls to resort to using makeshift or unsanitary materials during their periods. This not only poses health risks but also leads to social isolation, missed educational and economic opportunities, and a profound sense of shame and embarrassment.

Furthermore, the continuous stigmatization surrounding menstruation and the limited availability of extensive instruction on puberty and reproductive health exacerbate the challenges faced by those who menstruate (Boyers et al. 14; Rossouw and Ross 1; Sommer et al.7). Equally paramount is providing affordable and high-quality menstrual products and comprehensive health education programs that destigmatize the topic and empower individuals to manage their periods safely and confidently

(Boyers et al.16). Policymakers, civil society organizations, and the private sector must collaborate to develop and implement effective strategies prioritizing menstrual health and hygiene as a fundamental component of global health and sustainable development. Inadequate water, sanitation, and hygiene facilities are another significant barrier to good menstrual health. Without access to clean water, private spaces, and proper disposal methods, women and girls are unable to manage their periods safely and with dignity. The stigma and taboos surrounding menstruation further exacerbate these challenges. In many cultures, menstruation is perceived as a source of shame and impurity, leading to the marginalization of those who menstruate and the lack of open dialogue and education on the topic. A holistic strategy is needed to address the worldwide menstrual health issue, including tearing down damaging societal norms and stigmas and better access to infrastructure, education, and necessary supplies. All people who menstruate should have access to the resources and assistance they need to handle their periods in a dignified and secure manner. This requires the cooperation of policymakers, civil society groups, and the business sector.

Additionally, combining nudge-based strategies with traditional educational and awareness-raising efforts may result in a more comprehensive and useful approach to tackling menstrual hygiene-related issues. Comprehending the comprehensive context of menstruation health throughout India emphasizes the necessity for focused treatments. Menstrual hygiene management is a meaningful general health situation, particularly in low – and middle-income nations like India. Various studies like Dasgupta and Sarkar (78-79) showed that (42.5%) girls used old cloth pieces; moreover, (70.59%) girls did not go to any of the religious occasions, (50%) girls did not eat certain foods like sour foods, banana, radish, and palm. (42.65%) girls did not play, (33.82%) girls did not do any household task, (16.18%) girls did not attend school and (10.29%) girls did not get to any marriage ceremony while menstruating.

Another study of Sapkota et al. (125-126) according to the figures found that, 58.4% of the girls were not allowed to cook and go to the temples and 25.0% girls were not allowed to do any home related task and not touch male family member, this study also shows that only 37.7% shared that there is a relationship between poor personal hygiene and menstrual problems. Further, the research study of Amatya et al. (13) reported that half of the participants, 50%, lived in a livestock shed during menstruation, ate outside their home, and defecated in open spaces.

These studies highlight the need to implement proper education on sanitary material, awareness regarding right and need to improve behavioral aspect in India. Proper use of period products like sanitary pads, tampons, and menstrual cups is essential for effective menstrual hygiene management, since it is directly related to comfort, cleanliness, and integrity of menstruating persons. According to the survey of NFHS-5 (2019-21), adolescent girls in many parts of India use sanitary products, which vary from state to state. Bihar holds the lowest percentage of girls using a hygienic method during menstruation, 59.7%, Madhya Pradesh (61%), and Meghalaya, 65.6% (UNFPA India,2022). These geographical disparities underline the inherent variations in menstrual health management nationwide. According to the study of Biswas et al. (8), state-wise data on the exclusive utilization of hygiene products within the age of 15-24 years highlights that states like Bihar, Madhya Pradesh, and Meghalaya fall below 65% for the usage of menstrual products. 65% to 75% is observed in Jammu & Kashmir, Uttar Pradesh, Jharkhand, Chhattisgarh, Gujarat, and Assam. There is a high adoption rate of MHM products in Uttarakhand; however, the existence of extreme stereotypes, traditional practices, and varying attitudes towards menstruation makes it a compelling case for the research study.

Moreover, another primary purpose for selecting Udham Singh Nagar for this study is that the total literacy rate of this district according to the census 2011 is 73.10 %, including Male Literacy - 81.90%, and Female Literacy - 64.45%, which on average is very low. Since the literacy rate of females is comparatively lower and the population growth of Udham Singh Nagar is highest, the researcher wants to explore the awareness level for menstrual health and hygiene in the area and familiarity with the positive menstrual practices related to menstruation. While enabling the examination of how nudge-based interventions can maintain, enhance, and evolve menstrual hygiene practices in higher educational institutions.

Previous studies on Uttarakhand, like (Singh and Bhardwaj 22-23) study shows that 92.50% girls didn't changed their pads during school and 94.33% girls were restricted to attend religious functions and places. A study by (Nautiyal et al. 45) said that only 25% girls know about correct source of bleeding in spite of this 73.5% girls know this is a physiological process. Moreover, students had negative thinking and attitude related to going to the temple and even have sexual intercourse during menstruation. A study by (Patel and Kumari 504) showed that 13.75% of the participants were not allowed to touch other people while menstruating. This study also revealed that 80% of respondents had their separate sleep-

ing settings which include bedding, blankets and old dresses to be used during their period. However, there are various studies and research done on Uttarakhand related to menstruation. Understanding the shift of myth, misconception, and practices related to menstruation followed in Uttarakhand, specifically in Udham Singh Nagar, is important. Hence, while keeping these pointers in mind, the researcher selected this as a research area.

Lastly, implementing the nudge theory has great potential to improve menstrual hygiene practices in Indian educational institutions. As stated by The National Education Policy (NEP) 2020, by creating a more equitable and inclusive education system while collaborating with health groups, society can overcome long-standing cultural barriers, empower individuals, and ultimately achieve gender equality and improved public health outcomes by providing equal access to education for all, regardless of their background or circumstances, which in turn fosters a more inclusive and just society. Therefore, this research supports the cause of menstrual equality and dignity in Uttarakhand by encouraging behavioral change, encouraging inclusive education, and motivating an integrated movement.

## **2. Relevance of Menstrual Health and Hygiene in Higher Education Institutions**

Menstrual hygiene is an intense concern in most parts of the world. Due to a lack of proper education, lesser usage of sanitary products, and unawareness related to menstrual health and hygiene, issues many girls and women around the world suffer from vaginal infection and menstrual diseases. To eliminate menstrual-related myths and promote healthy practices, it is essential to provide education to females related to menstrual health and hygiene. According to WaterAid UK, education plays a significant role in the context of menstrual hygiene; education can help adolescents, women, and girls in terms of: -

1. Improving pupils' menstrual health
2. Debunking the menstrual taboo
3. Empowering young students
4. Raising consciousness of period poverty
5. Highlighting myths and misconceptions surrounding menstruation
6. Encouraging gender equality and inclusion
7. Promoting empathy

Education on the issue of menstrual hygiene is essential for empowering people, especially women and young girls, since it gives them proper knowledge about the normal biological process of menstruation. Anxiety, perplexity, and misunderstandings about menstruation can be reduced by being aware of the physiological changes that take place during this time. People who are more informed about menstrual health and hygiene habits can better make selections about their physical and overall health. With this information, they can adequately regulate their menstrual periods, which boosts their trust in themselves (CRY). A potent technique for breaking these social taboos and normalizing discussions about menstruation is menstrual hygiene education. By facilitating conversations, education can aid in the removal of stigma and concealment around menstrual health issues. This may promote a more accepting and encouraging atmosphere where people can control their menstrual periods without shame or anxiety (Garg and Anand 185-186). Menstrual health and hygiene have become increasingly recognized as crucial issues impacting menstruating individuals' well-being, education, and empowerment (Boyers et al. 2).

However, the challenges surrounding menstrual management remain widespread, particularly for marginalized populations. In education institutions, the lack of access to necessary resources, the persistence of stigma, and the inadequate infrastructure can pose significant barriers to students' managing their menstrual health with dignity and comfort (Rossouw and Ross 2-3; Sommer et al. 1302-1303). There is ample evidence of the differences in menstrual hygiene products and facility access according to socioeconomic status. Students from low-income backgrounds may find it extremely difficult to get enough clean menstruation supplies, which might push them to engage in risky behaviors that endanger their physical and emotional well-being. Moreover, the difficulties in managing menstruation might be made worse by the absence of private, accessible, and hygienic water sources as well as disposal facilities in educational settings, particularly for those from low-income households (VanLeeuwen and Torondel 170).

Beyond the obvious logistical difficulties, menstruation-related stigma and shame can seriously impede candid communication and successful intervention. The complicated problems surrounding menstrual health and hygiene in higher education need an all-encompassing, multisectoral strategy. This entails offering menstruation products at no cost or a reduced cost, ensuring sufficient sanitation facilities, offering thorough health education, and de-stigmatizing the problem via activism and awareness-raising. Higher education institutions may enhance their stu-

dents' well-being and academic performance and contribute to a more equitable and welcoming society by emphasizing menstrual health and cleanliness.

The topic of menstrual health and cleanliness at higher education institutions nationwide has recently attracted more attention. Highlighting this issue specifically in India, there hasn't been enough research done on the difficulties teenage girls and women have in low- and middle-income nations' workplaces, such as the lack of proper sanitation and water supplies for managing their periods. Insufficient resources for managing their menstruation sometimes cause impoverished students in India to resort to dangerous behaviors that worsen their health and cause stress, humiliation, and shame. According to the report by the Ministry of Health and Family Welfare in India, only 12% of women and girls had access to sanitary napkins. However, at the same time, they can also follow the ways of practicing conventional unhygienic methods during menstruation (Rohatgi and Dash 2). In the Indian context, there is much documentation of the disparities in access to menstrual hygiene products and services (Karjee et al.2).

The fear and shame associated with menstruation, stemming from societal taboos and stigma, have been documented in qualitative research as a way to restrict the resources and assistance accessible to menstruating persons. This makes menstrual health and hygiene a multisectoral policy problem (Shrestha and Bhatta 87-88). A thorough, multidimensional strategy is needed to address these issues at India's higher education institutions. Offering free or subsidized period products, ensuring enough facilities for water, sanitation, and hygiene, offering thorough education on menstruation health, and de-stigmatizing the problem via activism and awareness-raising are all examples (Proff et al. 8-9). By prioritizing menstrual health and hygiene in higher education, Indian institutions can improve their students' well-being and educational outcomes and contribute to a more equitable and inclusive society.

### **3. Nudge Theory**

Richard Thaler and Cass Sunstein, two behavioral economists, developed the concept of "nudge theory," which completely changed how humans view public policy and decision-making. The nudge theory's central tenet is that by subtly altering the "choice architecture," or environment in which people make decisions, behavior may be changed without impairing their ability to make choices. The goal of nudges is to take advan-

tage of the cognitive biases and heuristics that affect how decisions are made. Since such biases commonly lead people to make less-than-ideal judgments, nudges are designed to direct us toward more desired results while preserving our independence. One of the nudge theory's key benefits is its capacity to improve habits connected to health. Policymakers and practitioners might motivate people to make healthy choices, such as selecting a more nutritious food alternative or exercising regularly, by carefully crafting the choice environment. For instance, setting healthier snacks at eye level in restaurants might encourage patrons to select healthier foods. Numerous situations, including financial choices and safeguarding the environment, have seen the effective use of nudge theory, this theory can be a good example for prompting different positive behaviors (Karlsen and Andersen 1-2). Organizations and governments have instituted "nudge units" to utilize behavioral economics' insights and carry out nudge-based remedies (Della Vigna and Linos 82; Vlaev et al. 49). Nudge theory, a behavioral economics concept, offers a promising framework for developing more influential interventions for menstrual hygiene management. Nudge theory application is one lucrative way to tackle menstrual health problems. With no disruptions to appointments or financial inducements, this behavioral economics-based paradigm aims to influence individuals' choices and behaviors.

Nudge theory can also be very effective with Social and Behavior Change Communication (SBCC) framework to enhance behavior change by guiding people towards health action. SBCC is a highly effective communication approach that employs culturally sensitive, focused, and interactive messaging to alter the social norms and influence individual actions. It employs mass media, community-level, and interpersonal tools to confront behavior change obstacles and encourage healthy choices (Solihin et al.7). SBCC is crucial in menstrual hygiene management as it breaks taboos, empowers individuals with knowledge, and fosters enabling environments that support. Integrating nudge theory into SBCC strategies increases the result by helping individuals towards the desired behavior with the help of choice architecture. While SBCC focuses on the "why" aspect of the behavior change, the nudge argues the "how"- making health options easy, more applicable, and more likely to be adopted.

According to the nudge hypothesis, little, subtle actions can have a particularly noticeable and frequently sudden impact on an individual's manners and judgment. For instance, a study found that the physical presence and accessibility of menstrual pads might influence consumers' behavior and willingness to use menstruation goods (Vas and Munjal 201). Recom-

mending period products in suitable companies, making them more easily accessible, and creating a welcoming, inclusive environment for their use are all ways that policymakers and health groups may help individuals practice better menstrual hygiene.

Simultaneously, social pressure and community norms can efficiently promote menstrual health. Aiming to mainstream the issue and encourage others to attempt the same, interventions that emphasize the large number of people embracing good menstrual hygiene practices or the positive metrics of function might be beneficial. The significance of context and environment in influencing behavior is another fundamental tenet of the nudge hypothesis. Policymakers can establish a supportive ecosystem that facilitates healthier practices by creating physical environments and structures that promote excellent menstrual hygiene, such as clean, private, and well-maintained sanitation facilities in neighborhoods and schools (Rossouw and Ross 10-11). Institutions may enhance the current menstrual wellness and physical well-being of their student populations while simultaneously promoting more comprehensive societal change by putting nudge-based treatments into these environments. For example, universities might take advantage of social norms' influence by setting up peer-led educational programs regarding menstrual health, promoting candid conversations about the topic, and identifying students who are role models for healthy attitudes and actions. To make their interior spaces increasingly menstruation-friendly, they may also put together discreet sanitary goods dispensers, calm, cozy changing areas, and simple utilization of soap and water.

The concept of nudge theory majorly lies in the premise that nudges must be subtle and not very time- and effort-consuming. It comes from the thought of choice and liberation, labeled as "libertarian paternalism," wherein the intentional manipulation of choices is meant to enhance the positive direction of change while maintaining the freedom of choice (Thaler and Sunstein). Little academic and research orientation has been given to nudge theory and libertarian paternalism. One example of such work is the field experiment at a train station (Kroese et al.), which aims to investigate how nudges could influence healthier food selections. They implemented a nudge by relocating food items to place healthier options near the cashier, while less healthy items were positioned elsewhere in the store.

This intervention led to an increase in the sales of healthier products. Further research can be conducted to apply the nudge theory as a behavior-

al approach to change the surroundings of young adolescent females. By applying the nudge theory to menstruation, there is a chance of better behavioral changes related to the usage of sanitary products in rural areas. The study aims to achieve the following research questions and objectives while explaining all the upcoming sections of MHM, the relevance of menstrual hygiene in higher educational institutions, and nudge theory.

#### **4. Research Question**

How can nudge-based interventions influence positive changes in menstrual hygiene behaviors among higher education institutions in Udham Singh Nagar?

#### **5. Research Objectives**

1. To examine current menstrual health and hygiene practices among students in higher education settings in Udham Singh Nagar.
2. To investigate the theoretical foundations of nudge theory and its applicability to influencing health-related behaviors.

#### **6. Methodology**

Qualitative research methodology will be used to achieve the objectives of the study. Interviewing young adolescent girls from Udham Singh Nagar, Uttarakhand, entails a comprehensive and impartial evaluation of the study's design, methods, and findings. This approach will allow an in-depth exploration of menstrual health hygiene practices and the applicability of nudge theory while influencing behavior change. For this study, semi-structured interviews were conducted to collect detailed narratives from the participants, while focusing on identifying repeated themes, individual experiences, and social factors that influence menstrual hygiene behaviors. The study design was evaluated with a critical eye, such as the sustainability of the interview format, the practicality of the data methods used to gather and analyze techniques (thematic analysis), and the level of openness and reflection preserved throughout the research process. By performing a qualitative study, this research becomes more credible by ensuring that the findings have roots in the real-life experiences of the participants and that they remain practical in the natural world, thereby impacting future scholarly work, educating policy choices, and directing

professional practices. Although, there is no need for a precise guideline related to the number of participants, researchers can aim for studying 10 and 50 participants according to their study (Creswell),

Hence, for this research study the researcher have taken in depth interviews to understand the need of nudge theory in context of menstruation in Udham Singh Nagar, Uttarakhand. The sample size was 10 young girls aged 15-18 years of age living in Udham Singh Nagar and studying in senior secondary classes. This qualitative study focuses on the thematic analysis and collection of narratives from adolescent females in higher education settings in Udham Singh Nagar. The inquiry will focus on the current menstrual health and hygiene practices as they are encountered and defined by participants, and especially how they feel and react to nudge-based strategies within their educational environments. This research examines the current menstrual health and hygiene practices as experienced and described by participants. Furthermore, it investigates the participants' responses for the theoretical foundations of behavior change, which are essential to menstrual hygiene. The above objectives' results will pave the way to form the basis for recommendations on nudge-based interventions in MHM.

## **7. Result**

The result of this study provides a descriptive overview of the experiences, challenges, and perceptions of adolescent females in higher education institutes throughout Uttarakhand concerning menstrual health and hygiene. With the help of thematic analysis of the interview narrative, key themes depict the complex relationship between individual behavior, cultural practices, economic barriers, and social norms. These themes also depict the possible use of subtle, nudge-based interventions, which include educational prompts, environmental adjustments, and peer-led initiatives, that promote more positive menstrual hygiene practices in the institutional areas. The following table (Table 1) depicts the significant themes that are supported by participants' quotes and contextual analysis: -

**Table 1- Themes generated from the interview analysis**

<b>Codes</b>	<b>Theme</b>	<b>Description</b>
<b>Fear, Discrimination, Impurity</b>	Taboo and Social Stigma	Interviews depict that menstruation continues to be a taboo subject, which in turn encourages feelings of fear, discrimination, and humiliation within students. Socially, it is considered taboo to discuss periods widely, especially in co-educational environments.
<b>Limited Access, High Cost and Financial Barriers</b>	Accessibility and Socioeconomic Challenges	The cost and lack of access to quality menstrual hygiene products, mainly for those from lower backgrounds, limit consistent menstrual hygiene practices.
<b>Positive Reinforcement Celebration and Cultural Shift</b>	Celebration of Menstruation and Cultural Acceptance	Regardless, the general stigma and prevailing attitudes regarding menstruation depict that menstruation is now acknowledged and even celebrated as a natural biological process, which indicates an increasing cultural shift towards positivity.
<b>Innovation and Health Awareness</b>	Sustainable Solutions and Innovation	Students and institutions increasingly use innovative, affordable menstrual solutions (like reusable pads and pad banks) to improve menstrual health at a reasonable cost.
<b>Awareness Campaign, Confidence and Participation</b>	Gender Equality and Education, Empowerment	Thematic narratives indicate nudges through educational seminars, workshops, and peer support in higher education institutions, which help us empower students, promote gender equality, and provide reproductive health literacy.

The above table signifies the perception of young females around the current menstrual health and hygiene practices in higher education settings in Udham Singh Nagar. These themes will further strengthen the base to form the theoretical foundations of nudge theory and its applicability to influencing health-related behaviors. The next section discusses the usefulness of nudge theory in improving menstrual health behaviours.

## 8. Discussion and Conclusion

This study investigates the applicability and usefulness of the nudge theory in improving menstrual hygiene behaviors in higher education settings. The difficulties with managing and teaching menstruation health in higher education settings may be solved by implementing the various different approach that support behavior shift and support positive change (Kuhlmann et al. 374). Hence, the principles of nudge theory, which can be an outstanding technique of changing people's behavior through subliminal messages and encouraging feedback can be applied in the context of menstrual health and hygiene (Vlaev et al .49). The study emphasizes how critical it is to overcome the disparity in knowledge and ignorance about menstrual health and hygiene habits, especially for adolescent girls pursuing higher education (Garikipati 409). Nudge-based interventions can help break traditional obstacles and promote more effective menstrual health practices. These interventions include making menstruation products easily accessible, fostering an atmosphere that can be more welcoming and accommodating for examining menstruation, and utilizing cultural standards and peer pressure (Garikipati 397). Additionally, the study's findings highlight the value of customizing measures and education about menstrual health to the particular requirements and preferences of the intended population, taking into account variables like age, socioeconomic standing, and cultural heritage (Garikipati 409; Kuhlmann et al. 357; Yilmaz et al.264). While understanding the theoretical foundation of nudge theory, the study suggests the applicability to influencing health-related behaviors.

Higher education institutions may foster a more supportive and empowering climate for students to effectively handle their menstrual cycles using a comprehensive and inclusive strategy. Although studies regarding applying the theory of nudges to menstrual health are still in their infancy, what is known thus far indicates that it has much potential for tackling the complex issues that women and girls encounter. Schools of higher learning may significantly contribute to promoting improved menstrual wellness habits and, eventually, enhancing their students' general well-being and academic achievement by meticulously designing initiatives that use behavioral understanding. Also, as the nudge theory is an economically viable theory and a great example of a participatory communication technique, including nudge for menstrual hygiene in higher educational institutions of India can be a great success. After careful consideration of themes and theoretical basis of nudge theory, the researchers strongly recommend nudge policies such as the promotion of following healthy

habits during menstruation, interactive tools, using digital reminders, promoting healthy eating habits during menstruation, and leveraging visual graphics to encourage healthier practices, which tend to steer people toward desirable behavior gently, can be added to the existing campaigns and policies, thereby achieving the goal of positive social change.

In addition, as recommended by Murayama, Takagi, Tsuda, and Kato (6), along with the review by researchers of this study, the steps towards inclusion of nudge theory in various campaigns can be achieved by following simple steps such as identifying the behavior of the target population; creating a consumer behavior map; designing, and implementing a nudge. Overall, better knowledge, convenience, and acceptance of viable and ecologically friendly management of menstrual health solutions can result from integrating nudge theory into menstruation health hygiene procedures throughout higher education.

According to UNICEF, following menstrual health and hygiene interventions, especially in adolescence, can help in overcoming any obstacle that includes fulfilling the demands for menstrual hygiene, also building one's dignity and conviction, and maintaining sexual and reproductive health. Centers for Disease Control and Prevention has shared some guidelines related to following good practices while menstruating, which include: -

1. Wear lightweight, breathable clothing.
2. Altering menstrual products regularly.
3. Keeping genital areas immaculate.
4. Using unscented toilet paper, tampons, or pads.
5. Drinking adequate liquids.
6. Tracking and monitoring our period.
7. Visiting a healthcare provider for an annual check-up.

The above guidelines are initiated for girls and women experiencing menstruation. Following the above-stated menstrual practices and implementing the procedures in one's behavior reduces the chance of facing health-related issues that surround menstruation. In the coming years, India will aim to achieve the "Viksit Bharat" goal, which also means a vision towards a "Developed nation" by 2047. Viksit Bharat aims to focus on

achieving the vision of sustainability in various aspects of development, including social, economic, technological, cultural, educational, and environmental. Hence, menstrual hygiene plays a crucial role in achieving the goal of academic and ecological sustainability in our society. Not only does spreading awareness of menstruation educate women and girls, but it also contributes to breaking cultural norms and practices surrounding menstruation.

Informing young adolescent girls and women to use sustainable menstrual products contributes to addressing the environmental issues surrounding menstruation. Also, menstrual hygiene is closely related to several Sustainable Development Goals (SDGs) of the United Nations, causing more than just a personal health concern. These SDGs include SDG 4 - Quality Education, SDG 5 - Gender Equality, and SDG 6 - Clean Water and Sanitation (RELX et al.). Striving to achieve these SDGs in the Indian context can also contribute to achieving the goal of Viksit Bharat in 2047. To accomplish sustainable and healthy menstruation, multiple behavioral modification interventions are working for the more significant cause. Interventions like Garima, 'PRAGATI (Peer Action for Group Awareness Through Intervention)', 'Fact for Life', and many more contribute to empowering menstrual hygiene initiatives in India (Chacko and Jose 453). Other initiatives, including Menstrual Health Alliance India (MHAI), Mukti Project, Sparsh Sanitary Napkin Distribution Scheme, Sabla Project, and many more, have positively helped in employing behavior modification towards menstruation in various states in India.

To encourage better menstrual health and hygiene in higher educational institutions among young females, the following nudges are recommended by the researchers:

**Leveraging Visual Graphics to Encourage Healthier Practices** - As illustrated in Figures 2 and 3, strategically placing visual aids, such as photos and informative graphics, on restroom walls can encourage students in educational institutions to utilize appropriate disposal facilities. These visual prompts promote improved menstrual hygiene practices by providing clear instructions and reinforcing the significance of proper waste disposal, thereby creating a more hygienic and supportive environment. By integrating eye-catching and informative visual elements, institutions can foster the development of healthier habits in a non-intrusive and engaging manner. When placed at eye level in washrooms, the following nudges (see figs. 2 and 3) can act as examples of helping young female students adopt the desired behaviour:



**Fig 2: Riopads. “How to Dispose Sanitary Pads: 7 Methods for Sanitary Pad Disposal” (2024): Rio Pads.**



**Fig 3: Menstrupedia. “How to Dispose Sanitary Pads Correctly?”(2024) Menstrupedia.**

- **Promotion of Following Healthy Habits during Menstruation:**

Encouraging the adoption of healthy habits through posters, images, and graphics, such as reminders to wash hands before and after changing sanitary products, can significantly enhance the well-being of menstruating individuals. By promoting handwashing as a nudge activity, these visuals can subtly guide individuals toward adopting healthier practices during menstruation, fostering better hygiene and overall wellness.

- **Interactive Tools:**

Developing interactive instructional resources, including quizzes and educational games, to actively engage individuals in learning about menstrual health and hygiene in an engaging and informative manner.

- **Using Digital Reminders:**

Using apps or text messages to send reminders about healthy eating tips that share menstrual health facts can improve menstrual health behaviors. These digital reminders assist in better eating habits and remind users to track their menstrual cycles before their occurrence.

- **Promoting Healthy Eating Habits during Menstruation:**

With the help of graphics, visuals, and images, healthy eating habits can also be promoted and nudge the student toward a better lifestyle. In the canteens, kitchens, mess areas, and places responsible for distributing food facilities, informative images that include instructions about what to eat and what not to eat during menstruation can improve understanding of menstrual health and hygiene. Also, sharing knowledge about healthy supplements and healthy food can be helpful.

To enhance menstrual health and hygiene in higher educational institutions, the following recommendations are given to encourage young women and female students to adopt healthier practices:

- **Improved Access to Menstrual Products:** To provide free or subsidized sanitary product dispensers in restrooms, ensuring these essential items are readily available when needed. Visible and accessible products are a gentle reminder to maintain proper menstrual hygiene.
- **Promoting Proper Disposal:** Strategically place well-labeled disposal bins in washrooms and common areas, accompanied by subtle signage promoting responsible waste management. This simple step fosters a clean and hygienic environment.
- **Promoting Sustainable Practices:** Subsidize eco-friendly menstrual products, such as menstrual cups and reusable pads, and accompany them with educational sessions highlighting their environmental and personal health benefits.
- **Positive Messages and Empowerment:** Display encouraging messages around campus, framing menstrual hygiene as an essential aspect of self-care and empowerment, fostering a sense of pride and responsibility in maintaining good health.
- **Comfortable spaces for Hygiene:** Design restrooms with privacy and comfort in mind, ensuring they provide clean and well-maintained spaces for students to manage their menstrual needs without hesitation.

By adopting these notions, higher education institutes could develop towards supporting environments focusing on menstruating persons' dignity, health, and autonomy. Addressing menstrual health and hygiene enriches students' academic experiences, fostering a campus of inclusiveness, equity, and well-being. Institutions are essential in dismantling the

vicious cycle of silence and stigma, facilitating the emergence of a more knowledgeable, self-assured, and health-conscious generation. Therefore, it is vital to examine current menstrual health and hygiene behaviors among the students in higher education to identify existing problems, evaluate the effectiveness of current programs, and develop focused interventions that address the actual requirements of students.

### Works Cited:

- Alhattab, S. "Fact Sheet: Menstrual Health and Hygiene Management Is Still Out of Reach for Many." UNICEF, 26 May 2022, <https://www.unicef.org/eap/press-releases/fact-sheet-menstrual-health-and-hygiene-management-still-out-reach-many#:~:text=Of%20the%20two%20countries%20with,ried%20during%20the%20first%20occurrence>.
- Amatya, P., Ghimire, S., Callahan, K.E., Baral, B.K. and Poudel, K.C. (2018). Practice and lived experience of menstrual exiles (Chhaupadi) among adolescent girls in far-western Nepal. *PloS one*, 13(12).
- Babbar, Karan, et al. "Menstrual Health Is a Public Health and Human Rights Issue." *The Lancet Public Health* 7.1 (2022): e10–e11. Print.
- Biswas, S., Alam, A., Islam, N. et al. Understanding period product use among young women in rural and urban India from a geospatial perspective. *Sci Rep* 14, 20114 (2024).
- Bonnie, Richard J., Clare Stroud, and Heather Breiner, editors. *Investing in the Health and Well-Being of Young Adults*. National Academies Press, 2015. Print.
- Boyers, Madeleine, et al. "Period Poverty: The Perceptions and Experiences of Impoverished Women Living in an Inner-City Area of Northwest England." *PLOS ONE* 17.7 (2022): e0269341. Print.
- Centers for Disease Control and Prevention. "Healthy Habits: Menstrual Hygiene." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 7 May 2024, [www.cdc.gov/hygiene/about/menstrual-hygiene.html](http://www.cdc.gov/hygiene/about/menstrual-hygiene.html).
- Chacko, Amala T., and Jolly Jose. "Health Communication Interventions

for Promoting Menstrual Health and Hygiene Management in India: A Review." E3S Web of Conferences, vol. 453, Nov. 2023, p. 01014. Web. 5 May 2023.

Chothe, Vikas, et al. "Students' perceptions and doubts about menstruation in developing countries." Health Promotion Practice, vol. 15, no. 3, 11 Mar. 2014, pp. 319-26,

Creswell, John W., and J. David Creswell. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Thousand Oaks : SAGE, 2018. Print.

CRY. Importance of Menstrual Hygiene Education For Girls in India. 11 Mar. 2025, <https://www.cry.org/blog/importance-of-menstrual-hygiene-education-for-girls-in-india/>. Accessed 13 April 2024.

Dasgupta, A. and Sarkar, M., (2008). Menstrual hygiene: how hygienic is the adolescent girl? Indian J. Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine, 33(2) : 77.

Della Vigna, Stefano, and Elizabeth Linos. "RCTs to Scale: Comprehensive Evidence from Two Nudge Units." Econometrica 90.1 (2022): 81-116. Web. 2022.

Garg, Suneela, and Tanu Anand. "Menstruation Related Myths in India: Strategies for Combating It." Journal of Family Medicine and Primary Care 4.2 (2015): 184-186. Web. Apr.-June 2015.

Garikipati, Supriya. "Asymmetric Information in Menstrual Health and Implications for Sustainability: Insights from India." Sustainable Consumption and Production, edited by R. Bali Swain and S. Sweet, vol. 1, Palgrave Macmillan, 2021. Web. 5 May 2023.

Government of India, Ministry of Education. (2020). National Education Policy 2020. [PDF] [www.education.gov.in](http://www.education.gov.in)

Jackson, Ronald L., et al. What Is Qualitative Research? Taylor & Francis, vol. 8, no. 1, 15 Oct. 2007, pp. 21-28. Print.

Karjee, Swagata, Margubur Rahaman, and Prites Chandra Biswas. "Contextualizing the Socio-Economic and Spatial Patterns of Using Menstrual Hygienic Methods among Young Women (15-24 Years) in India: A Cross-Sectional Study Using the National-

---

ly Representative Survey.” *Clinical Epidemiology and Global Health* 20 (2023). Web. 4 May 2025.

Karlsen, Randi, and Anders Andersen. *Recommendations With a Nudge. Technologies*, vol. 7, no. 2, June 2019, p. 45. Print.

Kashiwase, Haruna. “Observing World Menstrual Hygiene Day: Understanding the Struggles Through Data.” *World Bank Blogs*, 28 May 2024, [blogs.worldbank.org/en/opendata/observing-world-menstrual-hygiene-day--understanding-the-struggle#:~:text=In%20five%20out%20of%2051,t%20access%20proper%20menstrual%20materials](https://blogs.worldbank.org/en/opendata/observing-world-menstrual-hygiene-day--understanding-the-struggle#:~:text=In%20five%20out%20of%2051,t%20access%20proper%20menstrual%20materials)

Kroese, Floor M., David R. Marchiori, and Denise T. D. de Ridder. “Nudging Healthy Food Choices: A Field Experiment at the Train Station.” *Journal of Public Health* 38.2 (2016): e133–e137. Web. 4 May 2025.

Kuhlmann, Anne S., et al. “Menstrual Hygiene Management in Resource-Poor Countries.” *Lippincott Williams & Wilkins* 72.6 (2017): 356–76. Web. 1 June 2017.

Marques, Paulo, et al. “Menstrual Cycle among Adolescents: Girls’ Awareness and Influence of Age at Menarche and Overweight.” *Revista Paulista de Pediatria* 40 (2022): e2020494. Web. 5 May 2023.

Masih, Niha. “Spain Offers Paid Menstrual Leave: These Countries Have It, Too.” *The Washington Post*, 17 Feb. 2023, <https://www.washingtonpost.com/world/2023/02/17/spain-paid-menstrual-leave-countries/>. Accessed 18 Aug. 2024.

Mayo Clinic. “Period Irregularities to Get Checked Out.” *Mayo Clinic*, 23 Apr. 2023, <https://www.mayoclinic.org/healthy-lifestyle/womens-health/in-depth/menstrual-cycle/art-20047186#:~:text=The%20menstrual%20cycle%20is%20counted>

Menstrupedia. “How to Dispose Sanitary Pads Correctly?” *Menstrupedia*, [www.menstrupedia.com/articles/girls/sanitary-dispose](http://www.menstrupedia.com/articles/girls/sanitary-dispose). Accessed 11 Sept. 2024.

Mohammed, Shamsudeen, and Roderick Emil Larsen-Reindorf. “Menstrual Knowledge, Sociocultural Restrictions, and Barriers to Menstrual Hygiene Management in Ghana: Evidence from a

Multi-Method Survey among Adolescent Schoolgirls and School-boys." PLOS ONE 15.10 (2020). Web. 5 May 2023.

Murayama, Hiroshi, et al. "Applying Nudge to Public Health Policy: Practical Examples and Tips for Designing Nudge Interventions." International Journal of Environmental Research and Public Health 20.5 (2023). Web. 5 May 2023.

Nautiyal, Himani, et al. "Knowledge, Attitude and Practice Towards Menstrual Hygiene Among Adolescent Girls: A Case Study from Dehradun, Uttarakhand." Himalayan Journal of Social Sciences 16 (2021): 35–48. Web.

Olmstead, Lauren. "What Is Nudge Theory? How to Apply It in the Workplace." Whatfix, 9 June 2023, <https://whatfix.com/blog/nudge-theory/#:~:text=The%20groundwork%20for%20the%20idea,Health%2C%20Wealth%2C%20and%20Happiness.>

Patel, Sarita, and Vidya Kumari. "Society Myths, Taboos and Restrictions on the Adolescent Girls During Menstruation in Kumaun Division of Uttarakhand." International Journal of Applied Home Science 11.9 & 10 (2024): 499–506. Web.

Proff, Alexandria Alisa, et al. "Becoming Women: Period. Perceptions of Barriers and Facilitators to Menstrual Hygiene Management Programs for Pakistani Girls." Frontiers in Public Health 11 (2023). Web. 5 May 2023.

RELX SDG Resource Centre. "Menstrual Hygiene." 2024, <https://sdgresources.relx.com/menstrual-hygiene>.

Riopads. "How to Dispose Sanitary Pads: 7 Methods for Sanitary Pad Disposal: Rio Pads." How to Dispose Sanitary Pads 7 Methods for Sanitary Pad Disposal Comments, RIO Pads, 10 July 2024, [www.riopads.in/blogs/how-to-dispose-sanitary-pads](http://www.riopads.in/blogs/how-to-dispose-sanitary-pads).

Rohatgi, Ankita, and Sanchita Dash. "Period Poverty and Mental Health of Menstruators during COVID-19 Pandemic: Lessons and Implications for the Future." Frontiers in Global Women's Health 4 (2023): n. pag. Web. 4 May 2025.

Rossouw, Laura, and Hana Ross. "Understanding Period Poverty: Socio-Economic Inequalities in Menstrual Hygiene Management in

- Eight Low- and Middle-Income Countries." *International Journal of Environmental Research and Public Health* 18.5 (2021): 2571. Web. 5 May 2023.
- Sahin, Murat, et al. "Unpacking the Policy Landscape for Menstrual Hygiene Management: Implications for School WASH Programmes in India." *Waterlines* 34.1 (2015): 79-91. Web.
- Sapkota, D., Sharma, D., Pokharel, H.P., Budhathoki, S.S., and Khanal, V. K. "Knowledge and Practices Regarding Menstruation Among School Going Adolescents of Rural Nepal." *J. Kathmandu Medical College*, vol. 2, no. 3, 2013, pp. 122-28. Web. 5 May 2023.
- Shrestha, Ram Bahadur, and Apeksha Bhatta. "Menstruation Hygiene Management Among Adolescent School Girls of Inaruwa Municipality." *MedS Alliance Journal of Medicine and Medical Sciences*, vol. 2, no. 3, 2022, pp. 83-88. Web. 5 May 2023.
- Singh, Pratibha, and S. Bhardwaj. "Study on Hygiene and Sanitary Practices during Menstruation among Adolescent Girls of Udham Singh Nagar District of Uttarakhand." *International Journal of Home Science* 3 (2017): 21-23. Web.
- Singh, Sukhpal. "GENDERED BoP HYGIENE MARKETS IN RURAL INDIA: A CASE STUDY OF SOCIAL ENTREPRENEURSHIP AND SOCIAL INNOVATION." *The Hong Kong Journal of Social Work* 51.01n02 (2017): 51-72. Web. 5 May 2023.
- Sivakami, M., et al. "Effect of Menstruation on Girls and Their Schooling, and Facilitators of Menstrual Hygiene Management in Schools: Surveys in Government Schools in Three States in India, 2015." *Journal of Global Health* 9.1 (2018).Web.5 May 2023.
- Solihin, Olih, et al. "Social and Behavior Change Communication Framework." *Oxytocin and Social Function*, IntechOpen, 24 Jan. 2024. n. pag. Web. 5 May 2025.
- Sommer, Marni, et al. "Comfortably, Safely, and Without Shame: Defining Menstrual Hygiene Management as a Public Health Issue." *American Public Health Association* 105.7 (2015) : 1302-11. Web. 5 May 2023.
- . "Managing Menstruation in the Workplace: An Overlooked Issue in

Low- and Middle-Income Countries." *BioMed Central* 15.1 (2016). Web. 5 May 2023.

Thaler, Richard H., and Cass R. Sunstein. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Yale University Press, 2008.

UNFPA India (2022) *Menstrual Hygiene among Adolescent Girls: Key Insights from the NFHS-5 (2019–21)*. Analytical Series 2. Available at: <https://india.unfpa.org/sites/default/files/pub-pdf/analytical-series-2-menstrual-hygiene-among-adolescents-insights-from-nfhs-5-final.docx.pdf> (Accessed: 13 April 2025).

UNICEF. "Guidance on Menstrual Health and Hygiene." UNICEF, 2019, <https://www.unicef.org/media/91341/file/UNICEF-Guidance-menstrual-health-hygiene-2019.pdf>.

---. "Menstrual Hygiene." UNICEF, <https://www.unicef.org/wash/menstrual-hygiene>. Accessed 2 May 2025.

Van Eijk, Anna Maria, et al. "Menstrual Hygiene Management Among Adolescent Girls in India: A Systematic Review and Meta-analysis." *BMJ Open* 6.3 (2016): e010290. Print.

Van Leeuwen, C., and B. Torondel. "Improving Menstrual Hygiene Management in Emergency Contexts: A Literature Review of Current Perspectives." *Dove Medical Press*, vol. 10, Apr. 2018, pp. 169-86. Web. 5 June 2018.

Vas, Neysa, and Kalpana Munjal. "Understanding Consumer Behavior Towards Sanitary Pads: A Comprehensive Study." *African Journal of Biomedical Research* 28.1S (2025). Web.

Vlaev, Ivo, et al. "The Theory and Practice of 'Nudging': Changing Health Behaviors." *Public Administration Review* 76.4 (2016): 550–61. Web. 3 May 2025.

Water Aid UK. "Why Talk Menstrual Hygiene in the Classroom?" *WaterAid UK*, 4 Aug. 2024, <https://www.wateraid.org/uk/get-involved/teaching-resources/menstrual-hygiene/why-talk-menstrual-hygiene-in-the-classroom>.