

# A Community-Based Interventional Study on Knowledge, Attitude, and Practice on Usage and Management of Menstrual Products Among College Students

Swathi Gopinath<sup>1</sup>, Ramdas Bhat<sup>2\*</sup>, Shynia Neola Dsouza<sup>3</sup>, Fathima Tabsheera<sup>4</sup>, Krishnananda Kamath<sup>5</sup>

## Abstract

*Background and Aim:* Menstruation is a fundamental physiological process affecting women's health and well-being. Despite advancements, many women still face challenges in menstrual hygiene management due to lack of awareness, cultural taboos, and limited access to proper menstrual products and disposal methods. This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding menstrual product usage and management among college students in Dakshina Kannada, India, and evaluate the impact of an educational intervention. *Methods:* A community-based cross-sectional study was conducted with 150 female college students aged 18–24 years. Data was collected using a pre-validated self-administered questionnaire before and after an educational intervention. *Results:* Pre-intervention, 94% of participants used sanitary pads, while 4.66% used menstrual cups. Most participants (79.33%) gained knowledge about menstrual products from friends and family. Annual expenditure on menstrual products ranged from ₹1000 to ₹2000 for the majority. Initially, 58% were aware of government programs providing free or subsidized menstrual products, and 82% knew about ideal disposal techniques. Post-intervention, awareness of government programs increased to 98.67%, and all participants gained knowledge of proper disposal methods. *Conclusion:* The study revealed gaps in knowledge about proper menstrual product usage, management, and disposal. The intervention significantly improved awareness of government programs and proper disposal techniques. Findings highlight the need for comprehensive menstrual health education, addressing product choices, hygienic practices, and environmentally friendly disposal methods.

**Keywords:** Menstrual hygiene, sanitary napkins, menstrual cups, college students, knowledge, attitudes, and practices (KAP)

### \*Author for Correspondence

Ramdas Bhat  
E-mail: ramdas21@gmail.com

<sup>1,3,4</sup>PG Scholar, Department of Pharmacy Practice, Srinivas College of Pharmacy, Valachil, Farangipete Post, Mangalore, Karnataka, India

<sup>2,5</sup>Associate Professor, Department of Pharmacology, Srinivas College of Pharmacy, Valachil, Farangipete Post, Mangalore, Karnataka, India

<sup>3</sup>Professor, Department of Pharmaceutics, Srinivas College of Pharmacy, Valachil, Farangipete Post, Mangalore, Karnataka, India

Received Date: September 16, 2024

Accepted Date: September 26, 2024

Published Date: October 28, 2024

**Citation:** Swathi Gopinath, Ramdas Bhat, Shynia Neola Dsouza, Fathima Tabsheera, Krishnananda Kamath. A Community-Based Interventional Study on Knowledge, Attitude, and Practice on Usage and Management of Menstrual Products Among College Students: Trends in Drug Delivery. 2024; 11(3): 68–74p.

## INTRODUCTION

Menstruation is a fundamental physiological process that marks a significant transition in a woman's life, typically beginning between ages 11–15 (menarche) and ending between 40–45 years (menopause) [1, 2]. This cyclical phenomenon occupies approximately one-fifth of a woman's reproductive years, becoming an integral part of her existence. Each menstrual cycle results in a blood loss of 30–50 ml, which necessitates the use of absorbent products like sanitary napkins [3]. An ideal sanitary napkin should effectively absorb and retain menstrual fluid while maintaining hygienic conditions. Proper menstrual hygiene is crucial, as neglect in this area can lead to serious health issues for

women [4]. Despite advancements in modern society, many women still experience discomfort and hesitation when purchasing sanitary napkins from pharmacies, stores, and supermarkets [5, 6]. This reluctance highlights the persistent stigma and lack of open discussion surrounding menstruation in many cultures.

Globally, women and girls have developed diverse methods for managing menstruation, influenced by factors such as personal preferences, economic circumstances, product availability, cultural values, and educational background [2]. However, barriers to proper menstrual hygiene management and lack of awareness can result in reproductive tract infections and other serious health complications.

The market offers a variety of menstrual products, including disposable sanitary pads, menstrual cups, tampons, reusable cloth pads, and herbal-infused products. Women from lower economic backgrounds often resort to reusable towels or disposable sanitary pads. While most women are familiar with the use of sanitary napkins, many lack knowledge about proper disposal methods [3].

The absence of ideal disposal techniques for used menstrual materials remains a significant challenge in numerous countries worldwide. Many women dispose of their sanitary pads or napkins in domestic solid waste or garbage bins, contributing to unhygienic environmental conditions. In urban areas where modern disposable menstrual products are common, disposal methods include flushing in toilets and discarding in garbage bins. In contrast, women in other areas, particularly those using reusable pads and cloths, often resort to burning, burying, or disposing of waste in latrines [1, 7].

Most teenage girls are primarily aware of sanitary pads, largely due to advertisements in television and print media. While sanitary pads are designed for single use and limited duration, the market also offers reusable options such as cloth pads. Some sanitary products are economically accessible but pose disposal challenges, whereas biodegradable alternatives are available that minimize environmental impact [8–10].

Women's hygiene is a crucial aspect of overall health and well-being, and herbal sanitary napkins have emerged as an innovative solution in this context. However, there is a pressing need to examine the knowledge, attitudes, and practices surrounding menstrual product usage and management among young women, particularly college students who are at a critical juncture in their lives.

This research study aims to address this gap in understanding. By focusing on college students, we can gain valuable insights into the current state of menstrual health awareness and practices among young adults. This demographic is particularly important as they are often more open to new information and can potentially influence future generations' approaches to menstrual hygiene. The study will explore various aspects of menstrual product usage, including awareness of different types of products, factors influencing product choice, disposal practices, and attitudes towards menstruation and menstrual hygiene. Additionally, it will assess the level of knowledge regarding the environmental impact of different menstrual products and disposal methods. This community-based interventional study aims to identify areas where education and awareness programs can be implemented to improve menstrual hygiene practices. The findings of this research could inform policy decisions, educational curricula, and public health initiatives aimed at promoting better menstrual health and hygiene among young women. Furthermore, this study has the potential to contribute to the broader discourse on women's health, environmental sustainability, and social attitude towards menstruation. By addressing these interconnected issues, we can work towards creating a more informed, empowered, and health-conscious generation of young women.

## **METHODOLOGY**

### **Materials and Methods**

- *Study site:* Dakshina Kannada.
- *Study design:* Community-based cross-sectional study assessing knowledge, usage, and management of sanitary napkins.
- *Study period:* 6 months.
- *Sample size:* 150.
- *Ethics approval:* Srinivas Institute of Medical Science and Research Centre, Mukka-574146.

### Study Criteria

- *Inclusion:* Female college students (18–24 years) residing in Dakshina Kannada, willing to participate.
- *Exclusion:* Unwilling students, men.
- *Data source:* Pre-validated self-administered questionnaire covering knowledge, attitude, and practices related to menstrual products.

### Operational Modality

Data was collected from participants via structured interviews (15–20 minutes), conducted in Kannada or their preferred language. The survey aimed to evaluate the pros and cons of sanitary napkins and their alternatives (Figure 1).



**Figure 1.** Flowchart of study methodology for assessing knowledge, attitude, and practice (KAP) on menstrual product usage and management.

### RESULT

Table 1 provides a summary of the demographic characteristics of the participants in the study. A total of 150 female participants, aged between 18 to 24 years, were included in the survey. The participants were drawn from various parts of Dakshina Kannada, with 55% of the participants

residing in urban areas and 45% from rural areas. This demographic breakdown offers insight into the diversity of the study population and ensures representation from both urban and rural settings.

**Table 1.** Demographic data of participants.

Variable	Data
Total participants	150.
Age group	18–24 years.
Location	Urban (55%), Rural (45%).

Table 2 compares the study results between the pre-study and post-study phases, highlighting changes in participant knowledge, behavior, and awareness regarding menstrual products and hygiene.

**Table 2.** Study results of pre-study vs. post-study.

Question/Parameter	Pre-Study	Post-Study
Source of menstrual product knowledge.	Friends & family (79.33%), TV (19.33%), Newspaper (1.34%).	No data (post-study data not provided).
Type of absorbent used.	Cloth: 1.33%, Pads: 94%, Menstrual cup: 4.66%.	Cloth: 0%, Pads: 92.66%, Menstrual cup: 7.33%.
Number of pads used per day.	2 Pads: 30%, 3 Pads: 49.33%, >3 Pads: 20.67%.	2 Pads: 16%, 3 Pads: 54.67%, >3 Pads: 29.33%.
Annual expense on menstrual products.	<₹1000: 25.33%, ₹1000–1500: 32.67%, ₹1500-2000: 28%, >₹2000: 12.67%.	<₹1000: 21.22%, ₹1000–1500: 28.67%, ₹1500-2000: 30.67%, >₹2000: 19.33%.
Awareness of government programs.	Yes: 58%, No: 42%.	Yes: 98.67%, No: 1.33%.
Awareness of diseases associated with menstrual products.	Yes: 58%, No: 42%.	Yes: 96.67%, No: 3.33%.
Problems faced during periods.	Abdominal pain: 64.66%, Nausea: 8.66%, Itching: 12.66%, Rashes: 14%.	Abdominal Pain: 72.66%, Nausea: 5.33%, Itching: 13.33%, Rashes: 4.67%.
Awareness of ideal disposal techniques.	Yes: 82%, No: 18%.	Yes: 100%, No: 0%
Disposal techniques of menstrual products.	Incineration: 35.33%, Dustbin: 62%, Garbage: 1.34%, Dumping in pits: 1.34%.	Incineration: 20.67%, Dustbin: 72.67%, Garbage: 1.34%, Dumping in pits: 5.33%.

### Source of Menstrual Product Knowledge

Before the study, most participants (79.33%) learned about menstrual products from friends and family, followed by television (19.33%). The least common source of information was newspapers (1.34%). Post-study data on sources of information was not provided.

### Type of Absorbent Used

In the pre-study phase, 94% of participants used sanitary pads, 4.66% used menstrual cups, and 1.33% used cloth. After the intervention, menstrual cups increased to 7.33%, while no participants continued using cloth. The majority (92.66%) still used sanitary pads.

### Number of Pads Used per Day

Before the intervention, 49.33% of participants used 3 pads per day, 30% used 2 pads, and 20.67% used more than 3 pads. After gaining knowledge about menstrual hygiene, more participants (54.67%) used 3 pads per day, and the percentage of those using more than 3 pads rose to 29.33%, while fewer participants (16%) used only 2 pads.

### Annual Expense on Menstrual Products

Before the study, 25.33% of participants spent less than ₹1000 annually on menstrual products, while 32.67% spent ₹1000–1500, and 28% spent ₹1500–2000. After the study, the percentage of participants spending less than ₹1000 decreased to 21.22%, and more participants (19.33%) spent over ₹2000, reflecting an increased understanding of menstrual hygiene and product use.

#### **Awareness of Government Programs**

Pre-study, 58% of participants were aware of government programs related to menstrual hygiene, while 42% were unaware. After the study, nearly all participants (98.67%) were informed about these programs, showing a significant increase in awareness.

#### **Awareness of Diseases Associated with Menstrual Products**

Before the study, 58% of participants were aware of the health risks related to improper menstrual product use, while 42% were unaware. Post-study, awareness increased dramatically, with 96.67% of participants recognizing the associated health risks.

#### **Problems Faced During Periods**

In the pre-study phase, 64.66% of participants experienced abdominal pain, 8.66% reported nausea, 12.66% experienced itching, and 14% faced rashes. After the intervention, the percentage of participants experiencing abdominal pain rose to 72.66%, likely due to increased use of menstrual cups, while other problems remained similar or decreased slightly.

#### **Awareness of Ideal Disposal Techniques**

Before the study, 82% of participants were aware of proper disposal methods for menstrual products, while 18% were not. Post-study, all participants (100%) gained awareness of ideal disposal techniques.

#### **Disposal Techniques of Menstrual Products**

Pre-study, most participants (62%) disposed of menstrual products in dustbins, 35.33% used incineration, and small percentages used garbage (1.34%) or dumping in pits (1.34%). After the intervention, more participants (72.67%) used dustbins, while fewer (20.67%) used incineration. The percentage of participants using pits for disposal increased to 5.33%.

### **DISCUSSION**

Menstruation is a fundamental physiological process that significantly impacts the lives of adolescent girls and women, typically beginning between ages 11–14 (menarche) and concluding between 40–45 years (menopause) [5]. This study's examination of knowledge, attitudes, and practices (KAP) regarding menstrual product usage and management among college students in Dakshina Kannada, India, provides valuable insights into the current state of menstrual health awareness and practices [8].

The findings reveal a universal familiarity with menstrual products among participants, which is encouraging. However, the sources of this information varied significantly, with a majority (79.33%) learning from friends and family, and a smaller proportion (19.33%) from television. This disparity in information sources highlights the potential need for more formal and standardized education on menstrual health. Schools and colleges could play a crucial role in disseminating accurate and comprehensive information about menstruation and menstrual products. The predominant use of sanitary pads (94% of participants) aligns with global trends in urban and semi-urban areas. However, the low adoption rate of menstrual cups (4.66%) presents an opportunity for education about alternative, more sustainable menstrual products [1]. The environmental impact of disposable sanitary products is a growing concern worldwide, and promoting eco-friendly alternatives could be beneficial in the long term.

The annual expenditure on menstrual products, ranging from 1000–2000 rupees for most participants, with 19.33% spending over 2000 rupees after learning about health risks, underscores the economic burden of menstruation. This financial aspect is particularly relevant in the Indian context, where menstrual poverty is a significant issue. A study by Eijk et al. (2016) found that in some parts of India, up to 89% of women and girls use cloth, sand, or ash during menstruation due to the unavailability or unaffordability of commercial sanitary products [11].

The health issues reported by participants, including abdominal pain (64.66%), rashes (14%), itching (12.66%), and nausea (8.66%), are consistent with common menstrual symptoms reported in other studies [5]. The increased abdominal pain associated with menstrual cup usage (72.66%) is an interesting finding that warrants further investigation. It may be related to the learning curve associated with cup insertion or individual physiological differences. This highlights the need for proper education and support when introducing new menstrual products.

The awareness of government programs providing free or subsidized menstrual products among 58% of participants is promising [6]. However, the fact that not all aware participants utilized these benefits, and 42% were unaware of such programs, indicates a gap in the implementation and communication of these initiatives. This finding aligns with a study by Garikipati and Boudot (2017), which found that despite government efforts, the reach of menstrual health programs in India remains limited, particularly in rural areas [12].

The lack of knowledge about proper management and disposal of menstrual products among many participants is concerning [5]. The initial high rate of incineration (62%) for disposal is positive from an environmental perspective. However, the 36% who disposed of products in dustbins or garbage indicates a need for better education on hygienic and environmentally friendly disposal methods. The shift towards more appropriate disposal methods after education demonstrates the effectiveness of targeted interventions.

This study's findings on disposal practices echo broader concerns about menstrual waste management in India. A report by the Menstrual Hygiene Alliance of India (2020) estimated that India generates 12.3 billion disposable sanitary napkins annually, most of which end up in landfills [13]. The environmental impact of this waste is significant, highlighting the urgent need for sustainable menstrual products and proper disposal education.

The improvement in hygiene practices and the reduction in issues like rashes and itching after education underscore the importance of menstrual health education. This aligns with findings from other studies, such as Sumpter and Torondel (2013), which demonstrated that improved menstrual hygiene management (MHM) can significantly reduce the risk of reproductive tract infections [14].

The study highlights the critical need for comprehensive menstrual health education, not only covering biological aspects but also addressing product choices, proper usage, hygienic practices, and environmentally friendly disposal methods. Furthermore, there is a clear need to improve awareness and accessibility of government programs providing affordable menstrual products.

Future research could explore the long-term impacts of different menstrual products on women's health, the effectiveness of various educational interventions, and strategies to improve the uptake of sustainable menstrual products. Additionally, studies examining the intersections of menstrual health with socioeconomic factors, cultural beliefs, and environmental sustainability could provide valuable insights for policy-making and public health initiatives.

Ultimately, addressing these challenges requires a multifaceted approach involving education, policy implementation, and cultural shift towards open discussion of menstrual health. By continuing

to research and address these issues, we can work towards a future where menstrual health is universally recognized as a fundamental aspect of public health and women's rights.

## CONCLUSION

This study on menstrual product usage among college students in Dakshina Kannada, India, revealed universal product awareness but significant gaps in knowledge about proper usage and disposal. The educational intervention improved awareness of government programs and disposal techniques, promoting more hygienic and sustainable practices. Economic factors heavily influence product choices, while environmental concerns and health issues remain significant challenges. These findings underscore the need for comprehensive menstrual health education covering product choices, usage, and disposal methods. Future research should focus on long-term health impacts, intervention effectiveness, and sustainable product promotion. Addressing these challenges requires a multifaceted approach involving education, policy implementation, and cultural shifts, working towards universal recognition of menstrual health as a fundamental aspect of public health and women's rights.

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