

**KNOWLEDGE AND ATTITUDE TOWARDS THE USE OF ECO-FRIENDLY  
MENSTRUAL PRODUCTS AMONG FEMALE UNDERGRADUATES IN  
UNIVERSITY OF BENIN**

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BENIN CITY**

**DECEMBER, 2025**

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**BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF  
HEALTH SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF  
EDUCATION, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR  
THE AWARD OF BACHELOR OF SCIENCE DEGREE B.Sc. IN HEALTH  
EDUCATION, UNIVERSITY OF BENIN, BENIN CITY.**

**DECEMBER, 2025**

## CERTIFICATION

We, the undersigned certify that this project work is adequate in scope and was carried out by Jacenta Oghenefega ARHUEREMU with the Matriculation Number **EDU2209865**, in the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria in partial fulfillment of the requirements for the award of B.Sc (Ed.) Degree in Health Education.

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## **DEDICATION**

I dedicate this project to God Almighty, my parents Mr. and Mrs. **ARHUEREMU** and my siblings.

## ACKNOWLEDGMENTS

The researcher sincerely expresses her utmost gratitude to God Almighty, who in His infinite mercy and grace had protected, strengthened and guided her throughout her academic journey.

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## **ABSTRACT**

This study assesses the knowledge and attitude towards the use of eco-friendly menstrual products among female undergraduates in Benin City. Three research questions were raised to guide this study. The survey research design was adopted for this study; this is because the data was collected from a sample population with specific characteristics.

The population of the study comprised 43,679 undergraduates from the University of Benin. Out of this population, 273 students were selected as the sample, representing those who completed and returned the questionnaire. The instrument used to collect data for the study was a 15-item self-structured questionnaire. The instrument for the data collection was personally administered by the researcher to the respondents.

The findings of this study concluded that female undergraduates at the University of Benin have a good understanding of eco-friendly menstrual products and hold generally positive attitudes toward their use. However, these positive dispositions alone do not guarantee widespread adoption, as barriers such as limited availability, high cost, fear of infection, and socio-cultural norms hinder practical use. The study recommends that the university of Benin and relevant student bodies should promote awareness campaigns on eco-friendly menstrual products, highlighting proper usage, safety, hygiene, and environmental benefits. The study also recommends that efforts should be made to increase accessibility and affordability of eco-friendly menstrual products on campus through subsidized sales, partnerships with vendors, and student-led initiatives.

# CHAPTER ONE

## INTRODUCTION

### **Background to the Study**

Menstrual Hygiene Management (MHM) is a critical aspect of women's health, particularly among young women in tertiary institutions. Traditionally, menstrual products such as disposable pads and tampons have been widely used; however, concerns about their environmental impact, affordability, and health implications have sparked growing interest in eco-friendly alternatives. These alternatives include reusable menstrual cups, cloth pads, and biodegradable sanitary products, which are designed to reduce environmental waste and promote sustainable living (Harerimana, 2025; Pokhrel *et al.*, 2021). Low- and middle-income research underlines that disposable products are one of the main contributors to environmental pollution. Considering the above, Harerimana (2025) states that reusable menstrual products, in humanitarian settings, are a more viable option due to their ability to offer a more sustainable alternative option in such conditions, where wastes are greatly reduced with time (Harerimana, 2025).

In Nigeria, the trend of eco-awareness has not quite extended to the area of menstrual hygiene. Ikogho and Onoharigho (2025) also indicate that a variety of unsafe disposal practices are observed among female learners staying in hostels, such as

discarding without wrapping, burning, or burying in pits, all of which have a high environmental impact. Qualitative research also highlights how **familiarity influences product choice**. In Abuja, adolescent girls reported: “If I use pad, I feel comfortable and safe,” indicating how reliance on disposables is rooted in cultural trust and routine (Ene *et al.*, 2024). This illustrates that even when knowledge of eco-friendly products exists, perceptions of safety and comfort act as stronger determinants of use. Benin City, a major urban center in southern Nigeria, hosts several higher education institutions, including the University of Benin (UNIBEN), where young women form a significant portion of the student population. These female undergraduates are at a critical age for forming lifelong habits, including menstrual hygiene practices. As future leaders, educators, and professionals, their awareness and attitude toward sustainable menstrual products are essential to advancing public health and environmental consciousness. For example, Ikogho and Onoharigho (2025) observed that female students in most Nigerian universities are culpable in the area of waste management practices as it relates to their use of menstrual products like cotton wool, pads and napkins. They note that there is the prevalence of improper disposal practices like discarding without wrapping, burning, burying in pits, etcetera that pose serious environmental risks (Ikogho & Onoharigho, 2025).

Uwadia *et al.* (2022) have reported significant prevalence disparity of MHM between adolescents of public schools and their counterparts of private schools at Badagry

and linked the result to both poor infrastructures and socioeconomic conditions of the area. The menstrual stigma concept is well recorded all around the world. Explicit percentages are usually hard to nab, however, the scholars outline the stigma as the profound cultural feeling that menstruation is unclean or embarrassing, resulting in secrecy, dishonor and absenteeism. These cultural omissions usually do not encourage any open mouth or inquiry to regard the existence of eco-friendly menstrual products. Despite these barriers, however, research has indicated that the acceptability of environmental products can be achieved through the use of interventions. In another study, Amratul Pokhrel *et al.* (2021) showed continuous education and peer support increasing self-efficacy among Nepalese school girls to eventually normalize the use of menstrual cups.

Also, Ngozi and Obohjemu (2024) reported in Southeastern Nigeria that 88.8% of secondary school girls showed good knowledge of menstrual health and 92.5% showed positive practices with mothers as the major source of information (63.4%). This is why education is so important and why reliable sources of information have the ability to change attitudes and practices. The Nigerian setting, especially in places of learning, but the mentality at universities offers a subset crisis. The better-off undergraduates will develop lifelong patterns, and since they will become future point-in-charges the decisions made about menstruation and sustainability can make a big impact on related wider norms.

Given the increasing global focus on sustainability and environmental responsibility, evaluating the knowledge and attitudes of Nigerian undergraduates toward eco-friendly menstrual products is both timely and relevant. This study, therefore, seeks to assess knowledge, attitude, and challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City.

### **Statement of the Problem**

Despite growing global attention to environmental issues and sustainable living, the adoption of eco-friendly menstrual products among young women in Nigeria remains low. Female undergraduates, who are expected to be more exposed to health and environmental education, often lack accurate knowledge or harbor negative attitudes toward sustainable menstrual options. This is compounded by the cultural silence around menstruation, limited accessibility to eco-friendly products, and insufficient awareness campaigns targeted at this demographic. Existing studies have shown that while there is growing advocacy for eco-friendly menstrual practices in developed countries, developing nations like Nigeria still face considerable setbacks, including cultural taboos, poor dissemination of information, and the High initial cost of reusable products (Kaur *et al.*, 2022). If these young women, who represent an educated and influential segment of society, are not adequately informed or receptive to eco-friendly menstrual options, it raises concerns about the broader adoption of sustainable practices in Nigeria. Furthermore, the continued reliance on disposable

menstrual products contributes to environmental pollution and long-term waste management problems. Therefore, this study aims to bridge the knowledge gap by evaluating how much female undergraduates in Benin City know about eco-friendly menstrual products and how their attitudes shape their use or rejection of such options.

### **Research Questions**

The following research questions were raised to guide the study.

1. What is the level of Knowledge on Eco-Friendly Menstrual Products of female undergraduates in the University of Benin?
2. What is the attitude of female undergraduates towards the use of eco-friendly menstrual products in Benin City?
3. What are the challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City?

### **Purpose of the Study**

This study aims to examine the knowledge, attitude, and challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City. Specifically, the study will;

- Access the level of Knowledge on Eco-Friendly Menstrual Products of female undergraduates in the University of Benin.
- Examine the attitude of female undergraduates towards the use of eco-friendly menstrual products in Benin City
- Determine the challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City.

### **Significance of the Study**

This study is significant as it sheds light on the current state of awareness and attitudes toward eco-friendly menstrual products among Nigerian undergraduates. By focusing on female students in Benin City, the research will contribute to understanding how informed and receptive this population is toward sustainable menstrual practices. The findings will be valuable for health educators, environmental advocates, policymakers, and product developers in tailoring interventions, educational campaigns, and policies to increase acceptance and accessibility of eco-friendly menstrual solutions.

For health educators, this study will raise more awareness on the need for increasing awareness across sectors classrooms and higher institutions of learning on the health implications of the use of the new innovative menstrual products, especially reusable menstrual products and it's safety. This study will contribute significantly to creating more

awareness in the area of healthy usage of sustainable menstrual products, even as the health educational sector delves into the importance of the use of sustainable products as it pertains to the health of our environment and ecosystem.

For environmental advocates, this study will aid in exploring the frontiers of climate change and sustainability and how even decisions like using sustainable menstrual products and education in the area of environmental sustainability can improve our environment. Using the University of Benin female undergraduates as a case study in this research, environmental advocates will be able to penetrate Nigeria with the message of sustainability, because Undergraduates in the University provides the platform to further enlighten the Nigerian populace. This is because, institutions of learning serve as the foundation for true transformation amidst the deluge of unsustainable practices ravaging Nigeria as a nation. Policy makers will also benefit from this research because it explores the need for the government to not only create awareness on environmental sustainability across board, but also create policies that would enhance environmental sustainability. This includes penalties for practices that are a threat to the environment.

Finally, this research is beneficial for product developers as it sheds light on further studies that investigate the effectiveness and safety of the materials used in producing menstrual products that are reusable. It explores the performance indices of biodegradable

products and this sheds light on the materials that harmless and useful for health and wellness of consumers.

### **Scope of Study**

This study focuses on female undergraduates in university of Benin, specifically assessing their knowledge and attitudes toward eco-friendly menstrual products. It focuses only on the Undergraduates of the University of Benin, Benin City, Nigeria. It however does not extend to postgraduate students, or non-student populations. The research will not cover all aspects of menstrual hygiene management but will center on knowledge, attitudes and challenges influencing the usage of eco-friendly menstrual products.

### **Definition of Key Terms**

**Eco-Friendly Menstrual Products:** Reusable or biodegradable menstrual hygiene products such as menstrual cups, cloth pads, and organic sanitary pads that have minimal environmental impact.

**Menstrual Hygiene Management:** The practice of using clean and safe methods for managing menstruation, including access to appropriate products, facilities, and education.

**Knowledge:** The level of awareness or understanding that an individual has about a subject; in this case, eco-friendly menstrual products.

**Attitude:** A person's feelings, beliefs, and behavioral tendencies toward a concept or object in this case, eco-friendly menstrual options.

**Female Undergraduates:** Women who are enrolled in undergraduate programs at recognized tertiary institutions in Benin City.

## CHAPTER TWO

### REVIEW OF LITERATURE

This Chapter reviews the literature for this study under the following subheadings:

- Concept and Evolution of Eco-Friendly Menstrual Products
- Knowledge of Eco-Friendly Menstrual Products among Undergraduates
- Attitudes toward Eco-Friendly Menstrual Products
- Factors Influencing Knowledge and Attitudes
- Summary of literature review

#### **Concept and Evolution of Eco-Friendly Menstrual Products**

The way menstrual hygiene is managed has a long history, which has evolved over time in response to social, cultural, and technological factors. Throughout the era of the old world, women relied on absorbent products available in the wild from leaves, grass, or with fabric cut in pieces. Oral history from Asia also reports the use of "menstrual bag" equipped with hemp or silk fibers which were worn around the waist, and after washing, tied again around the waist and used again (Elledge *et al.*, 2018; Tu *et al.*, 2021). While women in Europe and North America during the 19th century began producing washable cloth pads in the homes, with the advent of industrialization disposable pads became prevalent and

quickly superseded washable pads (Fernandez-Martinez *et al.*, 2020). This was the start of the international sanitary pad market, the conventional one today.

Though disposable pads and tampons have made things a lot easier and more mobile for many women, these products are now seen as less eco-friendly. Research reports the minimum required number of years needed to be decomposed is around 500 years to 800 years because of its plastic group content thus posing an IoW problem in future for many coming years (Yadav, 2017). If pads were incinerated or combusted, toxic pollutants such as dioxins would be released into the environment and contribute to air and soil pollution (Peberdy *et al.*, 2019). With each woman menstruating tens of thousands of times throughout her lifetime and thousands of pads being disposed of in landfill, the collective impact on landfill and ecosystems is considerable (Harrison *et al.*, 2023).

Environmentally Friendly Menstrual Products (EFMPs) developed as alternatives to this environmental burden. These include menstrual cups, reusable cloth pads, biodegradable pads and menstrual underwear products, made from various fibers of plant origin, such as bamboo, banana, cotton and hemp (Rajah *et al.*, 2024). Numerous life cycle assessment (LCA) studies comparing menstrual cups and reusable pads with different products have consistently identified menstrual cups and reusable pads to have considerably lower environmental impacts than the disposable products, both for waste generation and carbon footprint (Fourcassier *et al.*, 2022). For example, proper use of

menstrual cups (with a useful life of up to 10 years) significantly reduces the amount of menstrual wastes produced annually (van Eijk *et al.*, 2019).

Biodegradable pads have also hit the market. Hybrid pads constructed of banana fibres, bamboo pulp, or papyrus are not only absorbent and durable, but they are compostable as well, and, so, are a compromised option for individuals who don't wish to use reusables (Achuthan *et al.*, 2021). According to some research, these types of materials lessen the need for plastics and greatly decrease the environmental impact of menstrual hygiene management (Foster *et al.*, 2021). Similarly, reusable depressed pad cellulose cloth material, at its optimal use and storage, becomes economically and ecologically favorable; in particular, where lack of financial means is an issue.

But barriers are not absent when integrating EFMPs. They depend on reliable access to clean water and soap and private washing or sterilization facilities, which are scarce in LMICs (Schmitt *et al.*, 2022). There are other factors such as cultural taboos around menstruation, as a result of stigma and misconception it may deter women in trying new products such as menstrual cups (Bobel *et al.*, 2020). In Nigeria, for instance, due to resentment around menstruation and poor waste disposal infrastructure, both awareness and willingness to use such eco-friendly products is inhibited (Ikogho and Onoharigho, 2025).

## **Knowledge of Eco-Friendly Menstrual Products among Undergraduates**

Knowledge of menstrual hygiene products is one of the important factors that influence adoption and usage of sanitary products. Being enrolled at an academic institution, undergraduates are thought by many to have greater access to information and knowledge, which might put them in a position to be more knowledgeable than others; however, studies indicate that gaps in accurate knowledge continue to exist. For example, one study in Nigeria found that while the majority of female students had heard of sanitary pads, very few had much knowledge of eco-friendly options, such as menstrual cups or reclaimable pads (Esan *et al.*, 2023). Similarly, Uwadia (2022) reported continued disparities in menstrual hygiene knowledge among adolescents in Lagos State with variation in respect of school form and social class. These data lead to the conclusion that by the time girls make it to university, their understanding of sustainable alternatives may remain fragmented.

It turns out that similar things have happened all over the world. Multi-country systematic review (van Eijk *et al.*, 2019) shows that while there is increased awareness of menstrual cups and cloth pads, there is little actual understanding of the safety, life expectancy and environmentally-sustainable nature of these products. For instance, many students are able to recognize a menstrual cup by name but do not know how to use it, how long it will last or how to sanitize it safely (Pokhrel *et al.*, 2021). This discrepancy between

recognition and functional knowledge is particularly important because it has direct implications for willingness to try new products.

For many young people living with disabilities in Nigeria and other low- and middle-income countries (LMICs), the key sources of menstrual health knowledge are still mothers, peers and school education, but not health education evolving from institutional interventions (Ngozi & Obohwe, 2024). The continued use of these informal sources can sometimes propagate myths. A qualitative study found that many adolescent girls in Abuja associated the use of disposable pads with safety and comfort, showing a lack of exposure to alternatives is diminishing teenage girls' ability to critically evaluate ecologically friendly options (Ene *et al.*, 2024). In particular, without practical demonstrations, menstrual cups may be seen as unsafe or culturally inappropriate - just go ten meters down the hallway and ask a nurse for an opinion.

Yet these challenges are not thwarting increasing advocacy. NGOs and public health initiatives have developed starter kits, educational workshops and peer-led demonstrations to normalize the use of EFMPs. Updates from clinical trial in Nepal and India: It was shown that education and volunteering in menstrual cups and reusable pads leads to notable increases in adoption by pupils (Pokhrel *et al.*, 2021). In Nigeria, similar campaigns are slowly raising awareness for the benefits of eco-friendly menstrual products

from both a health and environmental perspective, but issues of affordability and access still need to be addressed (Esan *et al.*, 2023).

In essence, eco-friendly menstrual products is at the peak of sustainability reaction for the ecological problem which arose when changemakers have adopted the practice of disposable sanitary products. The most sustainable alternatives are menstrual cups and cloth pads - but if you're not used to using items you have to wash, then buying biodegradable pads can be the next 'step' to greener washing habits. Overcoming infrastructural, cultural and economic barriers to their spread is crucial if their take-up is to increase, particularly in university settings where young women are developing lifelong health and environmental habits.

We have known from educational interventions that this knowledge can be improved substantially. Trials in Nepal showed that absolute increase in knowledge about menstrual cups and uptake of menstrual cups with structured information sessions and practical trainings were significant (Pokhrel *et al.*, 2021). Similar evidence from an India context indicates that product demonstrations complemented by education regarding hygiene and sanitation norms lead to reduced misconceptions among the girls and improved confidence on managing safe menstrual products (Achuthan *et al.*, 2021). Not only did the training site show a steep increase in knowledge against time, but the specific patterns of course usage suggest that learning involves more than knowledge awareness,

but also guaranteed validation through up-to-date information that will form a basis of confidence for their usage.

In Nigerian tertiary institutions, little has been done in the thematic area of specific studies aimed at measuring knowledge of eco-friendly menstrual products. However, menarology-related literature suggests that, though students have heard about eco-friendly options, there is often little to no understanding on the benefits and proper use (Esan *et al.*, 2023). This suggests that undergraduate students represent an important target audience for intervention on the basis that students in this group are undergoing substantial changes to their habits. Increasing the state of knowledge at this level thus could have long-term consequences for public health and environmental sustainability.

### **Attitudes toward Eco-Friendly Menstrual Products**

These reflect not only knowledge, but also perceptions of comfort, safety, cultural acceptability, and environmental friendliness in the selection of menstruating products. Most favorable, and unfavorable opinions were prevalent in undergraduate population - ranging from curiosity and openness to hesitation due to misconceptions in relation to recognition of eco-friendly menstrual products (EFMPs). A systematic review highlighted that while menstrual cups and reusable pads are acceptable once tried, both often have at least neutral or negative initial attitudes due to concerns regarding insertion, hygiene and

leakage (van Eijk et al., 2019). These results indicate that attitudes are as much the function of social thinking and cultural stories as objective knowledge.

In Nigeria, in a study on menstrual waste practices it was found that many young women who use disposable pads believe this will probably be the safest and most convenient form of pad, affirming a preference for single use (Ikogho & Onoharigho, 2025). This attitude remains true even when students understand eco-friendly alternatives already exist because disposables are considered consistent with social norms around privacy and hygiene. Similarly, Ene *et al.*, 2024 found that students reported disposable pads as "comfortable and safe" while being suspicious about alternative products such as menstrual cups. These attitudes show how cultural stigma attached to menstruation can compound negative views of products that must be handled in a more intimate space.

Experience can change attitudes in ways that research reinforces, which is international. In South Africa, one randomized crossover trial found that university student participants presented to menstrual cups were highly satisfied with both comfort and leakage control with improved attitudes regarding menstrual cups after the menstrual cup trial relative to baseline perceptions (Beksinska, *et al.* 2015). Other studies in other contexts including India and Nepal confirm that with education and some repeating support assumptions, attitudes about the reusability of products change in a positive direction over

time (Pokhrel *et al.*, 2021; Achuthan *et al.*, 2021). These results indicate the value of physical interaction in changing opinion from eliminationist to acceptanceist.

And attitudes also have a part to play due to environmental awareness. Anxiety pressures: With an increased emphasis on sustainability issues, some undergraduate students express their willingness to use eco-friendly menstrual products, due to lower impact to the environment (Fourcassier *et al.*, 2022). However, willingness is generally conditioned by a concern about comfort, cultural appropriateness or ease of use. Empirical research indicates that even though students express pro-environmental attitudes towards the concept of sustainability, personal concerns related to hygiene and social stigma still have an influence on practice decision making (Harrison *et al.*, 2023). This juggernaut between environmentalism and comfort illustrates a general ambivalence towards green products.

### **Factors Influencing Knowledge and Attitudes of Eco-friendly Menstruation Products**

A number of factors influence how undergraduates learn about and develop attitudes towards eco-friendly menstruation products (EFMPs). These include environmental and economic factors, cultural norms, availability of infrastructure, access to response sources of academic exposure, perception of safety, etc.

- Environmental and Economic Component

One of the most powerful drivers in insistence for the transition towards EFMP is the momentum from the environment. Girls also save the environment: LCA studies have overwhelmingly shown that menstrual cups and reusable pads contribute significantly to less waste and less GHG emissions when compared to disposable products, making them the most sustainable option (Fourcassier et al., 2022). Of course, cost is another major factor. Although menstrual cups and cups for both menopause and Disposable devices are more expensive initially, after having paid for them, compared with menstruating and menopausal pads, they can be used for up to ten years, which makes them more cost effective than buying pads regularly (van Eijk et al., 2019). In such cases where students are financially constrained, this long-term economic benefit can be an important influencer for adoption.

- Cultural Norms and Stigma

Taboos and associated cultural beliefs about menstruation stand as major hindrance to the adoption of ecological sanitary stories. In Nigeria, for instance, it has been documented those biases associated with menstruation prevent students from discussing or indulging in the trying out of other alternatives (Ikogho and Onoharigho, 2025). This is very much similar to feedback received from people in India where restrictions and secrecy during menstruation causes negative perceptions about products like menstrual cups (Hiranandani,

2024). These cultural barriers double down on the age-old perception that disposables are the "safe" and socially acceptable choice, even if students understand how reusables are better for our environment.

- Infrastructure, water and sanitation

There are also practical factors for adoption: Projects based on reusable products as, for example, the cloth pads, may rely on secure access and availability of water, soap and drying space. In many LMIC settings, lack of hygiene facilities has been reported as a significant constraining factor for use of safe water, sanitation, and hygiene services (Schmitt *et al.*, 2022). Sub-Saharan African studies have demonstrated that pupils devoid of toilet facilities, or not possessing proper sanitary environments, are less probably going to think about reusables as an option (Hennegan *et al.*, 2024). Even students with good understanding may have negative opinions about EFMPs if they are unsupported infrastructure.

- Academic Exposure and Peer Pressure

However, disciplinary background also has an impact on knowledge and attitudes. Students of health sciences or environmental studies are generally more exposed to issues of hygiene and sustainability, leading to increased awareness and more positive attitudes (Esan *et al.*, 2023). Peer-change also plays an important role: we have found in Nepal that

peer-led show-and-tells and testimonials helped to raise students' confidence and willingness to try menstrual cups (Pokhrel *et al.*, 2021). This means peer education and mentoring are potentially effective measures to change attitudes at universities.

- Sense of Safety and Comfort

Finally, perceptions of safety and comfort continue to play a key role in students' decision making. Whilst evidence from systematic reviews has shown that menstrual cups and reusable pads are safe when used correctly, many undergraduates are concerned about infection, insertion pain or leakage (Ene *et al.*, 2024; van Eijk *et al.*, 2019). But even if we are aware of the environmental or economic benefits, it is the reduction of risk that may be the deciding factor in using a particular practice, emphasizing the necessity of well-defined risk communication and practical training. When students feel they are safe and hygienic because of reliable information and demonstration, students' attitudes tend to be more optimistic (Achuthan *et al.*, 2021).

Conclusively, undergraduates' knowledge and attitudes towards EFMPs is determined and influenced by a multiplicity of factors such as awareness of the environment, the cultural background, the economic situations, the availability of infrastructures, the academic exposure to these issues, and safety perceptions. Successful interventions therefore must be multi-faceted - they must target not only gaps in knowledge, but the social, cultural, and structural obstacles to adoption.

## Summary of Literature Review

The reviewed literature in this chapter demonstrates the increased relevance of eco-friendly menstrual products (EFMPs) to the health of the population and the environment. Industrial methods designed for blocking menstruation have been adopted to replace complex methods in history, but as the most expedient choice, caused serious environmental contamination and waste disposal problems in the future (Yadav, 2017; Peberdy *et al.*, 2019). Most recent advances in the development of reusable and biodegradable products like menstrual cups, cloth pads, or banana or bamboo-based pads have clear benefits for both the environment and the economy (Fourcassier *et al.*, 2022; Achuthan *et al.*, 2021).

Irrespective of these advantages, research studies tend to continually indicate that what undergraduates possess is an incomplete knowledge. Although living in a world where green substitutes are a reality, not all students know how to use them properly, when they should stay clean, and in the long term (Esan *et al.*, 2023; Pokhrel *et al.*, 2021). This disjunction suggests that formal education on health and demonstrations in practical ways must serve as the core for conversion of recognition to functional knowledge associated with decisional behavior.

Students reported largely categorical attitudes toward EFMPs driven by factors in their potential, including environmental awareness and price reduction, as well as concerns over culture, hygiene and fear of uncomfortable experiences (Ikogho and Onoharigho, 2025; Harrison *et al.*, 2023). Indeed, direct exposure, through trials, demonstrations, and peer testimonials, has evidence of potentially affecting attitudes in a positive way, given the importance of practical engagement in overcoming reluctance (Beksinska *et al.*, 2015; Pokhrel *et al.*, 2021).

Several determinants come together to create changes to knowledge as well as attitudes. They range from environmental and financial factors, to socio-cultural beliefs, to infrastructure constraints, to exposure to academia, and to perceptions of safety (Schmitt *et al.*, 2022; Hennegan *et al.*, 2024). These issues would be approached via an integrated intervention: upgrading of WASH infrastructure; harmonisation of EFMPs with learning processes; facilitating peer-led delivery; and affordability through subsidy or starter packs.

Finally, the literature recommends that undergraduates hold a crusader status in the uptake of sustainable menstrual practices. Their decisions as future champions and change agents will have wider impacts on environmental sustainability practices and women health in Nigeria and across. However, to modify behavior, the intervention should not only take place in the field of awareness-raising but must go deeper to build holistic knowledge,

rebuild attitudes and to assist in the socio-cultural and infrastructural barrier that stops the production of environmentally sensitive periodontal products.

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter described the research methodology used in this study under the following subheadings:

- Research Design
- Population of the Study
- Sample and Sampling Techniques
- Research Instruments
- Validity of the Research Instrument
- Reliability of the Research Instrument
- Method of Data Collection
- Method of Data Analysis

#### **Research Design**

This study employed the descriptive survey research design. According to Creswell and Creswell (2018), a descriptive survey involves systematically collecting information

from a sample of individuals with the aim of describing and interpreting existing conditions, practices, or opinions within a population. This design was considered most suitable for the study because it enabled the researcher to obtain specific responses from students of the University of Benin regarding the knowledge, attitude, and challenges of ecofriendly menstrual products. Therefore, the adoption of the descriptive survey research design was justified, as it helped the researcher systematically assess knowledge and attitude of ecofriendly menstrual product among female undergraduate of the university of Benin.

### **Population of the Study**

The target population was 43,679 full-time undergraduate students enrolled across the 15 faculties of the University of Benin during the 2024/2025 academic session. (Academic Planning Unit and the Student Affairs Division).

<b>S/N</b>	<b>Faculty</b>	<b>Population of the Study</b>
1	Agriculture	1685
2	Arts	6262
3	Basic medical science	3437
4	Dentistry	111

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5	Education	8656
6	Engineering	5481
7	Environmental Science	1016
8	Law	1078
9	Life science	5132
10	Management science	3505
11	Medicine	685
12	Pharmacy	1107
13	Physical science	3283
14	Social science	3411
15	Veterinary Medicine	70
	<b>Total</b>	<b>43,679</b>

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Source: Academic planning unit, Students Affairs Division, University of Benin, (2025)

### **Sample and Sample Technique**

The sample size for this study was 273 respondents. The multi-stage sampling procedure was adopted to obtain a representative sample of undergraduate students from the University of Benin. This approach was appropriate because it allowed the researcher

to reduce the large population into smaller, manageable groups while ensuring fairness, inclusiveness, and adequate representation across faculties.

In the first stage, systematic sampling technique was employed to select five faculties out of the fifteen existing faculties in the University of Benin. The faculties was arranged alphabetically, and the first and every third faculty was chosen. The selected faculties include Dentistry, Veterinary Medicine, Law, Education, Environmental Science. In the second stage, proportionate sampling was used to determine the number of respondents to be drawn from each selected faculty. Exactly 2.5% of the undergraduate population in each chosen faculty was selected to ensure that larger faculties contribute more respondents while smaller ones contribute proportionally fewer. This procedure produced a total sample size of 273 respondents.

In the third stage, simple random sampling was applied within each selected faculty to choose departments and levels of study. The balloting method with replacement was used to give each department and level an equal chance of inclusion.

Finally, individual respondents were selected from the chosen departments and levels through purposive sampling technique. This ensures that all undergraduate students in the selected faculties had equal opportunities to participate in the study on the influence of social media on their health and safety.

S/N	Faculty	Students per Faculty	Numbers of Respondent (2.5)
1	Dentistry	111	3
2	Veterinary Medicine	70	2
3	Law	2318	27
4	Education	8656	216
5	Environmental Science	1016	25
	Total		273

### **Research Instrument**

The instrument used for data collection in this study is a structured questionnaire titled *“Knowledge and Attitude of Eco-friendly Menstrual Products among Female Undergraduates of the University of Benin.”* The questionnaire is divided into three

sections: A, B, and C. Section A is designed to gather demographic information of respondents, including gender, age, faculty, and level of study. Section B contains items that assess respondents' knowledge of eco-friendly menstrual products, while Section C contains items that measure attitudes towards these products. Additionally, Section D includes items on the challenges associated with the use of eco-friendly menstrual products among female undergraduates.

The questionnaire incorporates a combination of multiple-choice questions, scored as 0–3 correct, 4–6 correct, and 7–10 correct, and Likert-scale items structured on a four-point scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The inclusion of both multiple-choice and Likert-scale items allows the instrument to capture both factual awareness and personal opinions, providing depth and precision in the responses. This design makes the questionnaire appropriate for quantitative analysis and ensures effective measurement of students' knowledge, attitudes, and perceptions regarding eco-friendly menstrual products.

### **Validity of the Instrument**

The questionnaire was given to the researcher's supervisor and two other experts in the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State for scrutiny. Thereafter their suggestions and

observations were taken into consideration before the final copy of the instrument was produced and administered to the respondents.

### **Reliability of the Instrument**

The reliability of the instrument was determined using the test–retest method. Fifteen (15) copies of the questionnaire were first administered to a group of undergraduate students outside the study sample. After an interval of two weeks, the same instrument was re-administered to the same group of respondents. The scores obtained from both tests were correlated using the Pearson Product Moment Correlation Coefficient, which yielded a reliability index of 0.83. This coefficient confirmed that the instrument was reliable for use in the main study.

### **Method of Data Collection**

The instrument for the data collection was personally administered by the researcher to the respondent. The researcher explained to the respondent on how to indicate their views on each item. Efforts were made to explain the questions to the respondents in a manner that enabled them to respond objectively to the questions.

### **Method of Data Analysis**

Data was analyzed using frequency counts, percentage, mean and standard deviation in order to facilitate the interpretation of the data collected.

## CHAPTER FOUR

### DATA PRESENTATION AND DISCUSSION OF FINDINGS

This chapter presents the analysis of data and discussion of findings collected from 273 female undergraduate students of the University of Benin, based on the four research questions guiding the study.

**Research Question One: What is the level of knowledge of eco-friendly menstrual products among female undergraduates in Benin City?**

Table 4.1: Level of Knowledge of Eco-Friendly Menstrual Products (MCQs)

S/N	Knowledge Level	Frequency (f)	Percentage (%)
1	High Knowledge	185	67.8

S/N	Knowledge Level	Frequency (f)	Percentage (%)
2	Moderate Knowledge	70	25.6
3	Low Knowledge	18	6.6

Table 4.1 presents the respondents' level of knowledge based on multiple-choice questions. The results show that **67.8% of students scored between 7–10 correct answers**, indicating a high level of knowledge, while 25.6% demonstrated moderate knowledge, and only 6.6% showed low knowledge. This suggests that the majority of female undergraduates at the University of Benin have a good understanding of eco-friendly menstrual products, including the differences between reusable and disposable options, materials used, proper usage, and sustainable disposal methods.

**Research Question Two: What is the attitude of female undergraduates towards the use of eco-friendly menstrual products in Benin City?**

Table 4.2: Mean and Standard Deviation of Respondents' Attitude

S/N	Attitude Statement	Mean ( $\bar{X}$ )	SD	Decision
1	I feel positive about using eco-friendly menstrual products	3.25	0.84	Agree
2	I believe eco-friendly menstrual products are safe and hygienic	3.19	0.82	Agree
3	I am willing to switch to eco-friendly menstrual products	3.15	0.83	Agree
4	I feel confident recommending eco-friendly menstrual products	3.12	0.85	Agree
5	Social or cultural beliefs make me hesitant to use	3.28	0.79	Agree

*Cluster Mean = 3.20 (Moderate)*

From Table 4.2, the analysis of responses shows that female undergraduates generally hold a positive attitude towards eco-friendly menstrual products. All items under this research question have mean scores above 3.0, which indicates agreement among respondents.

The highest mean score (3.28) was recorded for the statement that social or cultural beliefs make students hesitant to use eco-friendly menstrual products, suggesting that respondents are aware of socio-cultural barriers. Similarly, students agreed that they feel positive about using eco-friendly products (3.25), consider them safe and hygienic (3.19), are willing to switch with proper guidance (3.15), and feel confident recommending them to peers (3.12).

The cluster mean of 3.20 and standard deviations ranging from 0.79 to 0.85 reveal a consistent pattern of responses, indicating that, overall, female undergraduates exhibit a agreement and generally positive attitude toward eco-friendly menstrual products.

**Research Question Three: What are the challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City?**

Table 4.3: challenges influencing the use of eco-friendly menstrual products

S/N	Challenge Statement	Mean ( $\bar{X}$ )	SD	Decision
1	I don't know enough about eco-friendly menstrual products	3.13	0.85	Agree
2	I sometimes worry that using reusable menstrual products	3.27	0.78	Agree

S/N	Challenge Statement	Mean ( $\bar{X}$ )	SD	Decision
3	It is difficult to find eco-friendly menstrual products to buy around the campus	3.29	0.79	Agree
4	The price of eco-friendly menstrual products is too high for me	3.29	0.82	Agree
5	I feel that my cultural beliefs and social stigma make it uncomfortable to use or talk about reusable menstrual products	3.32	0.80	Agree

*Cluster Mean = 3.26 (Moderate)*

Table 4.3 explores perceived challenges influencing the use of eco-friendly menstrual products among female undergraduates. The cluster mean of **3.26** indicates agreement in challenges faced by students in adopting eco-friendly menstrual products. Key barriers include inadequate knowledge (3.13), fear of infection (3.27), limited availability on campus (3.29), high cost (3.29), and cultural or social stigma (3.32). The slightly higher mean for cultural and social stigma suggests it is the most significant barrier. These findings imply that beyond awareness and knowledge, structural, economic, and socio-cultural factors heavily influence the use of sustainable menstrual products.

### **Discussion of Findings**

This study examined female undergraduates' knowledge, attitudes, and challenges regarding eco-friendly menstrual products in Benin City. The findings are discussed in line with the three research questions and supported by existing literature.

The analysis of Table 4.1 shows that a majority of respondents (67.8%) demonstrated high knowledge of eco-friendly menstrual products, while 25.6% had moderate knowledge, and only 6.6% had low knowledge. This indicates that most female undergraduates at the University of Benin possess a good understanding of eco-friendly menstrual products, including their types, proper usage, and environmental benefits. The high level of knowledge may be attributed to increased access to information through peers, social media, and educational campaigns. These results are consistent with the findings of Adebayo and Ojo (2020), who reported that awareness and knowledge significantly influence the adoption of sustainable menstrual practices among university students.

From Table 4.2, the analysis of responses shows that female undergraduates generally hold a positive attitude toward eco-friendly menstrual products. All five attitude statements have mean scores above 3.0, indicating agreement among respondents. The highest mean (3.28) relates to social and cultural beliefs affecting hesitation, highlighting respondents' awareness of socio-cultural barriers. Students also agreed that eco-friendly products are safe and hygienic (3.19), they feel positive about using them (3.25), are willing to switch with guidance (3.15), and feel confident recommending them to peers (3.12). The cluster mean of 3.20 and standard deviations ranging from 0.79 to 0.85 suggest a consistent pattern of agreement, indicating that respondents generally hold a moderately positive attitude. These findings align with previous studies by Onyeka and Nwankwo (2019), who

observed that positive perceptions and personal attitudes significantly influence the willingness of students to adopt eco-friendly menstrual products.

Table 4.3 shows the perceived challenges affecting the use of eco-friendly menstrual products. The cluster mean of 3.26 indicates agreement that female undergraduates experience several barriers. Key challenges include inadequate knowledge (3.13), fear of infection (3.27), limited availability on campus (3.29), high cost (3.29), and cultural or social stigma (3.32). The slightly higher mean for cultural and social stigma suggests that socio-cultural norms are the most significant barrier. These results imply that, in addition to awareness, structural, economic, and socio-cultural factors play a critical role in the adoption of sustainable menstrual products. Addressing these challenges through improved accessibility, subsidized pricing, health education, and destigmatisation campaigns could enhance usage, which is consistent with findings by Adebayo and Ojo (2020) regarding economic and cultural constraints on menstrual hygiene practices among university students.

The findings suggest that while female undergraduates in Benin City possess a good level of knowledge and hold positive attitudes towards eco-friendly menstrual products, several practical and socio-cultural barriers limit widespread adoption. Interventions targeting awareness, affordability, availability, and cultural acceptance are therefore necessary to improve the uptake of eco-friendly menstrual products among students.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **Summary**

This study examined the knowledge, attitude, and challenges associated with the use of eco-friendly menstrual products among female undergraduates in Benin City. The primary aim was to assess how knowledgeable students are about eco-friendly menstrual products, their attitude toward using such products, and the major challenges influencing

their usage. Three (3) research questions were formulated to guide the study. Relevant literature was reviewed to provide theoretical and empirical background for the study.

The descriptive survey design was adopted, and a total of 273 female undergraduate students of the University of Benin participated in the study. Data were collected through a structured questionnaire that assessed students' knowledge levels, attitudes, and perceived challenges regarding eco-friendly menstrual products. The questionnaire was validated by the project supervisor and two experts in the Department of Health, Safety and Environmental Education. To establish the reliability of the instrument, the test re-test reliability method was used, and the coefficient obtained was considered adequate for the study. Data collected were analysed using frequency counts, percentages, means, and standard deviations.

## **Findings**

Based on the data collected and analysed, the study revealed the following:

1. Most female undergraduates possess a high level of knowledge about eco-friendly menstrual products.
2. Female undergraduates generally hold a positive attitude toward the use of eco-friendly menstrual products.

3. Despite good knowledge and positive attitudes, several challenges hinder students from using eco-friendly menstrual products.

## **Conclusion**

Based on the findings, it is concluded that female undergraduates at the University of Benin have a good understanding of eco-friendly menstrual products and hold generally positive attitudes toward their use. However, these positive dispositions alone do not guarantee widespread adoption, as barriers such as limited availability, high cost, fear of infection, and socio-cultural norms hinder practical use. Therefore, addressing these challenges is essential to ensure greater acceptance and utilization of sustainable menstrual hygiene products among students.

## **Recommendations**

In light of the findings, the following recommendations are made:

1. The University of Benin and relevant student bodies should promote awareness campaigns on eco-friendly menstrual products, highlighting proper usage, safety, hygiene, and environmental benefits.

2. Efforts should be made to increase accessibility and affordability of eco-friendly menstrual products on campus through subsidized sales, partnerships with vendors, and student-led initiatives.
3. Health education programmes should be implemented to address concerns regarding infections, proper maintenance, and cultural stigmas associated with reusable menstrual products.
4. Peer-led advocacy and counselling can be encouraged to reduce socio-cultural barriers and increase acceptance among students.

### **Suggestions for Further Studies**

Based on the scope and limitations of this study, the following suggestions are made for future research:

1. Future studies should examine the actual usage patterns of eco-friendly menstrual products among female undergraduates to determine the gap between knowledge, attitude, and practice.
2. Comparative studies across different universities or faculties could explore variations in knowledge, attitudes, and adoption rates of sustainable menstrual products.

3. Research could investigate the effectiveness of targeted interventions, such as awareness campaigns, subsidized pricing, or destigmatisation programmes, on increasing the uptake of eco-friendly menstrual products among students.

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## **APPENDIX**

**DEPARTMENT OF HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION  
FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY**

### **QUESTIONNAIRE**

**ON**

**KNOWLEDGE, ATTITUDE, AND CHALLENGES INFLUENCING THE USE OF  
ECO-FRIENDLY MENSTRUAL PRODUCTS AMONG FEMALE  
UNDERGRADUATES IN BENIN CITY**

Dear Participants,

I am a student of the Department of Health, Safety and Environmental Education, Faculty of Education, University of Benin. I am conducting a study on the above topic. I am carrying out a study on the above topic. I therefore solicit for your responses, all your response will be treated with confidentiality.

Please answer the following questions honestly and to the best of your knowledge. Your participation is entirely voluntary, and all information will be kept confidential.

Yours faithfully,

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**(Researcher)**

## Section A: Demographic Information

**Instruction: Kindly respond by ticking (✓) the appropriate box.**

1. Age Range: 16–20years [ ] 21–25years [ ] 26–30years [ ] 31 years and above [ ]
2. Department: \_\_\_\_\_
3. 3. Level of Study: [ ] 100 [ ] 200 [ ] 300 [ ] 400 [ ] 500

## Section B: Respondents' Responses

Research Question One: What is the level of Knowledge Test on Eco-Friendly Menstrual Products

**Instruction: Select the option that best answers each question.**

1. **The key difference between reusable and disposable menstrual products is that reusable products:**
  - a) Must be used once and discarded.
  - b) Can be washed, sterilized, and reused safely for months or years.
  - c) Are cheaper but less hygienic.
  - d) Contain more absorbent chemicals.
2. Which of the following is an example of an eco-friendly menstrual product?
  - a) Disposable pad
  - b) Menstrual cup
  - c) Tissue paper
  - d) Panty liner
3. What material are menstrual cups commonly made from?
  - a) Medical-grade silicone or rubber
  - b) Cotton and plastic
  - c) Paper and gel
  - d) Latex and nylon

4. **Before first use, a menstrual cup should be:**
  - a) Rinsed quickly under tap water.
  - b) Stored dry for two weeks.
  - c) Boiled or sterilized to kill microorganisms.
  - d) Lubricated with scented oils.
5. **Which of the following could lead to infection when using reusable menstrual products?**
  - a) Drying pads in sunlight after washing.
  - b) Storing damp pads in an airtight bag.
  - c) Sterilizing cups regularly.
  - d) Washing with mild soap and water.
6. **Which of the following is a *misconception* about menstrual cups?**
  - a) They are difficult to insert and remove
  - b) They can be used safely by unmarried women
  - c) They cause infections if not cleaned properly
  - d) They can leak if not fitted correctly
7. **Medical-grade silicone used in menstrual cups is preferred because:**
  - a) It absorbs blood like cotton pads.
  - b) It is flexible, non-toxic, and safe for internal use.
  - c) It prevents all leakage automatically.
  - d) It changes color to indicate fullness.
8. **A major health benefit of menstrual cups over tampons is that they:**
  - a) Completely stop menstruation.
  - b) Eliminate the risk of toxic shock syndrome.
  - c) Reduce dryness and maintain the vagina's natural pH balance.
  - d) Need no cleaning.
9. **What is the most sustainable disposal method for worn-out menstrual cups?**
  - a) Burning them in open air.
  - b) Burying or recycling them through silicone waste programs.
  - c) Throwing them into gutters.
  - d) Flushing them down the toilet.
10. **Which policy approach best supports eco-friendly menstrual health in universities?**
  - a) Subsidizing disposable pads.
  - b) Banning awareness campaigns.
  - c) Providing education and access to reusable options.
  - d) Encouraging students to reduce pad use entirely.

Section C: Attitude Test on Eco-Friendly Menstrual Products

<b>RQ2</b>	<b>What is the attitude of female undergraduates towards the use of eco-friendly menstrual products in Benin City?</b>	<b>SA</b>	<b>A</b>	<b>SD</b>	<b>D</b>
1	I feel positive about using eco-friendly menstrual products instead of disposable products.				
2	I believe eco-friendly menstrual products are safe and hygienic to use.				
3	I am willing to switch to eco-friendly menstrual products if I have proper guidance.				
4	I feel confident recommending eco-friendly menstrual products to my peers.				
5	Social or cultural beliefs make me hesitant to use eco-friendly menstrual products.				

**Section D: challenges influencing the use of eco-friendly menstrual products**

<b>RQ4</b>	<b>What are the challenges influencing the use of eco-friendly menstrual products among female undergraduates in Benin City?</b>				
11	I don't know enough about eco-friendly menstrual products or how to use them				
12	I sometimes worry that using reusable menstrual products could cause infections or other health problems				
13	It is difficult to find eco-friendly menstrual products to buy around the campus and in benin city.				
14	The price of eco-friendly menstrual products is too high for me as a student.				
15	I feel that my cultural beliefs and social stigma makes it uncomfortable to use or talk about reusable menstrual products.				

