KNOWLEDGE AND ATTITUDE TOWARDS ENVIRONMENTAL SANITATION AND PERSONAL HYGIENE OF FEMALE STUDENTS IN A TERTIARY INSTITUTION

BY

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IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR DEGREE IN NURSING SCIENCES (B.NSC.) COLLEGE OF MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

This is to declare that this research project titled "**KNOWLEDGE AND ATTITUDE TOWARDS ENVIRONMENTAL SANITATION AND PERSONAL HYGIENE OF FEMALE STUDENTS IN UNIVERSITY OF BENIN**" was carried out by **ABUTO EMMANUELLA OGHOSA.** It is solely the result of my work except where acknowledged as being derived from other person (s) or resources.

MATRICULATION NUMBER: _____

IN THE FACULTY/COLLEGE: NURSING SCIENCES,
UNIVERSITY OF BENIN, BENIN CITY.

Signature: …….

Date: …….

CERTIFICATION/APPROVAL

This is to certify that this research project by **ABUTO EMMANUELLA OGHOSA** with matriculation number **BMS2001224,** Faculty of Nursing Sciences, University of Benin, Benin City, under the supervision of **MRS F.A. ESEBAME**.

MRS F.A. ESEBAME _____
(Project Supervisor)
Signature & Date

PROF. (MRS.) C.E. OMOROGBE _____
Head of Department of Medical Surgical Nursing **Signature & Date**

_____ _____
External Examiner **Signature & Date**

DEDICATION

This work is dedicated to GOD ALMIGHTY who is providing me with the strength to complete my academic journey.

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ABSTRACT

Environmental sanitation and personal hygiene are fundamental pillars of public health, influencing the well-being and productivity of individuals, especially in academic settings like universities. This study assessed the knowledge and attitude of female students at the University of Benin towards these crucial aspects of health, with the aim of understanding their knowledge, attitude and factors regarding hygiene practices and sanitation. A total of 264 female students participated in this research, which utilized a structured questionnaire to gather data on their knowledge, attitudes, and practices. The results revealed that while (53%) students generally possessed fair knowledge about sanitation and hygiene, there were notable gaps in specific areas, such as menstrual hygiene and waste disposal practices by (28.7%). Furthermore, despite recognizing the importance of personal hygiene, (27%) students' practices were often influenced by various socio-cultural and environmental factors, creating a gap between awareness and actual behavior. The researcher suggests the need for targeted health education programs, better sanitation facilities, and a holistic approach to improving hygiene practices on campus. The findings provide valuable insights for healthcare professionals, particularly nurses, to develop interventions aimed at enhancing students' health literacy and improving their overall hygiene practices, thus contributing to a cleaner and healthier campus environment.

Keywords: *Knowledge, Attitude, Environmental Sanitation, Personal Hygiene, Female Students*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Environmental sanitation and personal hygiene are critical components of public health, particularly in educational settings where students interact closely. Maintaining proper hygiene and sanitation can prevent the spread of infectious diseases and contribute to a healthier learning environment (World Health Organization [WHO], 2020). Despite this, the level of knowledge and attitudes toward these practices among female students in tertiary institutions remains a concern. Personal hygiene, which includes regular handwashing, menstrual hygiene management, and general cleanliness, is essential for preventing infections and promoting overall well-being (Centers for Disease Control and Prevention [CDC], 2022). Inadequate menstrual hygiene management among female students can result in discomfort, infections, and school absenteeism, ultimately affecting academic performance (Bassey et al., 2021; UNICEF, 2021).

Access to sanitation resources and awareness of hygiene practices are fundamental for fostering positive behaviors. Female students often face unique challenges due to both biological needs and societal norms, especially during menstruation. In many developing countries, adolescents encounter difficulties maintaining hygiene due to insufficient water, sanitation facilities, and menstrual products, compounded by cultural taboos and stigma

(UNICEF, 2021; Omoregie et al., 2022). Such limitations negatively impact both health and academic engagement.

Environmental sanitation, which focuses on maintaining cleanliness in one's surroundings to prevent disease, also presents a significant area of concern. Research indicates that although students may understand the importance of sanitation, consistent practice is often lacking due to structural and resource-based barriers (Akinmoladun et al., 2022; American Public Health Association, 2020). Female students' knowledge and attitudes toward sanitation and personal hygiene are influenced by education, cultural norms, and resource availability, highlighting the need for intervention programs that combine education with adequate facilities (Ekpenyong et al., 2022; Chukwuemeka et al., 2020).

Studies have demonstrated that knowledge alone is insufficient to change behavior; availability of hygiene resources and supportive environments play a pivotal role (WHO, 2020; PLOS, 2020). For instance, research in Nigeria found that while female students were aware of proper hygiene practices, inadequate facilities and infrastructure prevented the consistent application of this knowledge (Ezeh et al., 2023; Ogunniyi et al., 2021). Similarly, positive attitudes toward environmental sanitation are reinforced when schools provide clean toilets, water, and handwashing stations (BMC Public Health, 2022; Baidya et al., 2024).

Attitudes and behaviors are closely interconnected. Female students with positive perceptions of their school's cleanliness are more likely to engage in sanitation practices,

such as proper waste disposal and maintaining clean surroundings (Baidya et al., 2024). Adequate sanitation facilities, coupled with education on personal hygiene, are strongly associated with improved academic outcomes and reduced absenteeism, particularly in regions where infectious diseases are prevalent (UNICEF, 2020; WHO, 2020).

Several studies have highlighted gaps in both knowledge and practice among female students. For example, Khamaiseh and Leimoon (2024) found that a significant proportion of female students displayed indifferent attitudes toward personal hygiene, emphasizing the need for targeted educational programs. Furthermore, social and environmental factors, such as access to clean water and school sanitation facilities, directly influence attitudes and hygiene practices (BMC Public Health, 2022; UNICEF, 2020).

Historically, hygiene has been closely linked to cultural and religious beliefs, shaping individuals' perceptions and practices. Effective hygiene promotion requires not only knowledge but also the development of positive attitudes and consistent practice (Getachew & Adem, 2020). Consequently, addressing environmental sanitation and personal hygiene among female students necessitates a combination of awareness, attitudinal change, and the provision of necessary resources to reduce the burden of communicable diseases and improve overall health outcomes in tertiary institutions.

1.2 Statement of the Problem

Knowledge of environmental sanitation and personal hygiene among female students in tertiary institutions, such as the University of Benin, is often insufficient, which can

negatively affect their health outcomes. Adequate understanding of the importance of sanitation and hygiene is essential, as it directly influences students' ability to maintain cleanliness and prevent disease transmission (Akinmoladun et al., 2022; Ekpenyong et al., 2022). Without sufficient knowledge, the proper practice of environmental sanitation and personal hygiene becomes challenging, undermining both individual and community health (Omoregie et al., 2022). Environmental sanitation and personal hygiene are fundamental human needs, and a clean environment is achievable only when proper hygiene practices are adopted (WHO, 2020; CDC, 2022).

In addition to limited knowledge, female students often exhibit poor attitudes toward sanitation and hygiene, which predisposes them to various illnesses. Diseases such as diarrhea, cholera, typhoid, skin infections, and parasitic infestations are common in settings where hygiene and sanitation practices are inadequate (Idris et al., 2021; Chukwuemeka et al., 2020). These health challenges can significantly affect students' academic performance, physical well-being, and overall quality of life.

Furthermore, the actual practice of environmental sanitation and personal hygiene among female students remains suboptimal. Effective hygiene and sanitation behaviors are critical for individual and community health, and they serve as a foundation for a productive learning environment (Getachew & Adem, 2020; BMC Public Health, 2022). Female students who maintain proper hygiene are more likely to enjoy better health, which positively influences their learning capabilities and academic performance (UNICEF, 2020; Bassey et al., 2021). Promoting positive attitudes, knowledge, and practices regarding

sanitation and hygiene among female students is therefore essential to ensure their well-being, enhance educational outcomes, and foster healthy behaviors that extend into broader society (Ezeh et al., 2023; Ogunniyi et al., 2021).

1.3 Objectives of the Study

The general objective of the study is to assess the knowledge and attitude of female students towards environmental sanitation and personal hygiene in University of Benin.

The specific objectives of the study are:

1. To assess the level of knowledge of environmental sanitation and personal hygiene among female students of University of Benin.
2. To ascertain the attitude towards environmental sanitation and personal hygiene among female students of University of Benin.
3. To identify the factors influencing the environmental sanitation and personal hygiene practices of female students at the University of Benin.

1.4 Research Questions

1. What is the level of knowledge of environmental sanitation and personal hygiene among female students of University of Benin?
2. What is the attitude of these female students in University of Benin towards environmental sanitation and personal hygiene?
3. What are the factors influencing the environmental sanitation and personal hygiene practices of female students at the University of Benin?

1.5 Significance of the Study

In the University of Benin, inadequate knowledge and attitudes among female students regarding environmental sanitation and personal hygiene can have serious public health consequences. Many students live in close quarters and share common facilities, which increases the risk of communicable disease outbreaks. In such environments, infections can spread rapidly, potentially affecting a large number of students in a short period and negatively impacting their academic performance and overall well-being.

Understanding the knowledge and attitudes of female students toward sanitation and hygiene is crucial for the effective planning and implementation of hygiene programs within tertiary institutions. Poor knowledge and unfavorable attitudes often lead to inadequate hygiene practices, which can contaminate the environment and contribute to the prevalence of communicable diseases in school communities.

This study is therefore significant as it seeks to assess the level of knowledge and attitudes of female students toward environmental sanitation and personal hygiene at the University of Benin. The findings will provide insights that can guide the development of targeted interventions and policies aimed at promoting proper hygiene practices, reducing disease risk, and supporting overall public health among students. By addressing gaps in knowledge and attitudes, the study will contribute to fostering a healthier campus environment and improving academic outcomes for female students.

1.6 Scope of the Study

This study is centered on assessing the level of knowledge and attitudes of female students toward environmental sanitation and personal hygiene at the University of Benin (UNIBEN). The research specifically targets female students enrolled in the Department of Law within the university. It focuses on evaluating their understanding, perceptions, and behavior relating to sanitation and hygiene practices within their academic environment. The scope is limited to gathering information on how well these students recognize the importance of proper sanitation and personal hygiene and the attitudes they demonstrate toward maintaining these practices.

1.7 Operational Definition of Terms

Knowledge: This refers to the level of understanding and awareness female students possess regarding environmental sanitation and personal hygiene.

Attitude: This describes the beliefs, perceptions, and dispositions that female students hold toward maintaining proper environmental sanitation and personal hygiene.

Environmental Sanitation: This involves activities and practices related to maintaining a clean environment, including proper waste management and reducing exposure to contaminants within the University of Benin setting.

Personal Hygiene: This refers to the daily practices and behaviors adopted by female students to prevent the spread of infections and promote health within their surroundings.

Female Students: This term is used to describe undergraduate women enrolled at the University of Benin who participate in this study.

CHAPTER TWO

LITERATURE REVIEW

This section examined related literature with focus on the conceptual, empirical review and theoretical framework.

2.1 Concept of Environmental Sanitation

Environmental sanitation involves the management of environmental conditions that may negatively impact human health. This includes proper waste disposal, access to clean water, pest control, and maintaining hygienic surroundings to reduce the spread of infectious diseases (Ogunniyi et al., 2021). Among university students, environmental sanitation also relates to understanding how behaviors such as littering and improper waste handling influence health and safety on campus (Akinmoladun et al., 2022). Effective sanitation practices are essential in reducing the incidence of illnesses such as dysentery, cholera, and other communicable diseases that thrive in contaminated environments. Additionally, female students' involvement in sanitation and hygiene practices can be influenced by social expectations and cultural norms, which shape their attitudes and overall approach to personal and environmental cleanliness (Chukwuemeka et al., 2020).

2.2 Concept of Personal Hygiene

Personal hygiene includes essential behaviors such as frequent handwashing, menstrual care,

and oral hygiene practices, all of which contribute to preventing the spread of infections and promoting good health (Ezeh et al., 2023). These practices are especially important for women, who may face greater health risks due to biological differences and gender-related expectations (Bassey et al., 2021). Beyond routine cleanliness, personal hygiene also encompasses awareness and proper use of sanitation facilities, appropriate handling of hygiene materials, and self-care habits that influence both well-being and social interactions within the university environment (Omoregie et al., 2022). The level of personal hygiene knowledge among female students can be shaped by factors such as educational background, cultural beliefs, and financial resources. Tertiary institutions, with their academic and health-based support systems, provide an opportunity to strengthen students' attitudes and understanding of hygiene through targeted educational initiatives aimed at improving health outcomes (Omoregie et al., 2022).

2.3 Environmental Sanitation in the University Context

Environmental sanitation involves the regulation and maintenance of the physical surroundings to prevent exposure to harmful environmental conditions. This includes effective waste disposal, water management, and ensuring that communal areas remain clean and hygienic (Akinmoladun et al., 2022; Ogunniyi et al., 2021). Within a university setting, environmental sanitation is essential for safeguarding student health, enhancing comfort, and supporting academic engagement. Facilities such as hostels, lecture rooms, libraries, and cafeterias require proper sanitation to limit the spread of disease-causing organisms and create a conducive learning atmosphere (Chukwuemeka et al., 2020;

Ekpenyong et al., 2022). When sanitation practices are neglected, the likelihood of infection transmission increases, which can lead to health challenges and reduced academic productivity among students (Ezeh et al., 2023).

The Importance of Environmental Sanitation in Universities

Environmental sanitation within university campuses plays a crucial role in promoting the health and well-being of students. Effective sanitation practices help reduce the spread of infectious diseases often linked to improper waste disposal, contaminated water, and poor hygiene behaviors (Akinmoladun et al., 2022). As institutions designed for learning and development, universities must prioritize sanitation to create a safe and healthy environment that supports both physical wellness and academic success (Chukwuemeka et al., 2020).

An unclean campus environment may increase students' exposure to preventable illnesses, which can lead to absenteeism, reduced academic performance, and lower productivity (Ezeh et al., 2023). Additionally, environmental sanitation contributes to emotional and psychological comfort. Poorly maintained surroundings can cause stress and discomfort, negatively affecting concentration and overall student engagement (Idris et al., 2021).

Ensuring that university facilities such as classrooms, hostels, cafeterias, and restrooms are clean, accessible, and well-maintained enhances students' overall experience. A clean environment supports healthy behavior, encourages positive academic outcomes, and enables students to participate fully in social and educational activities on campus (Ekpenyong et al., 2022).

Challenges of Environmental Sanitation in University Settings

Although environmental sanitation is essential for student health, many universities in Nigeria encounter considerable difficulties in sustaining hygienic conditions on their campuses. A major issue is the inadequacy of sanitation infrastructure, including restrooms, water systems, and waste disposal facilities (Ezeh et al., 2023). In institutions such as the University of Benin, limited resources and inconsistent maintenance often contribute to the deterioration of these essential facilities, resulting in environments that may expose students to health risks (Ogunniyi et al., 2021).

Insufficient funding also restricts the development and upkeep of sanitation systems. Aging infrastructure, poorly managed waste disposal, and an inadequate number of functional sanitation facilities are common challenges that negatively impact students' hygiene practices and well-being (Akinmoladun et al., 2022).

Another challenge relates to ineffective waste management. In various university settings, the absence of regular and efficient waste collection leads to improper disposal and littering, which create breeding grounds for disease-causing organisms and pests (Omoregie et al., 2022). Such conditions disrupt academic activities by reducing the comfort and safety of the campus environment, potentially affecting students' concentration, productivity, and overall university experience (Chukwuemeka et al., 2020).

Strategies to Improve Environmental Sanitation in Universities

Enhancing environmental sanitation in university environments requires systemic improvements and active participation from both students and staff. One essential approach involves upgrading existing sanitation facilities and ensuring continuous maintenance, such as improving water systems, ensuring clean and functional restrooms, and establishing efficient waste disposal methods (Akinmoladun et al., 2022).

Policies that encourage proper sanitation and hygiene practices on campus are also necessary. Through regular awareness campaigns and educational activities, universities can help students better understand their role in disease prevention and environmental cleanliness. Integrating sanitation education into student orientation programs can further strengthen early adoption of positive hygiene behaviors (Chukwuemeka et al., 2020).

Collaboration with relevant agencies including governmental bodies and organizations can support the development of effective waste management systems and sanitation services, thereby improving overall campus cleanliness and student health (Ezeh et al., 2023).

Additionally, encouraging student involvement in sanitation initiatives can build a culture of cleanliness. Activities such as hygiene-focused student groups, volunteer programs, and campus-wide cleanliness campaigns promote collective responsibility and contribute to a healthier academic environment (Ogunniyi et al., 2021).

2.4 Knowledge of Environmental Sanitation and Personal Hygiene Among Female Students

Assessing the knowledge that female students have about environmental sanitation and personal hygiene is essential in understanding their health practices. Findings from university-based studies indicate that students' understanding of sanitation is often shaped by the information available to them and the quality of facilities within their environment (Idris et al., 2021). Female students, particularly those residing in campus hostels, tend to face greater exposure to issues such as inadequate waste management and poorly maintained sanitation facilities, making knowledge in this area crucial for their well-being.

Research involving university students in southern Nigeria suggests that although many are familiar with basic hygiene routines, gaps still exist regarding their awareness of environmental risks that threaten public health (Ekpenyong et al., 2022). Female students generally show stronger knowledge of personal hygiene due to menstrual health needs; however, their understanding of broader environmental sanitation concerns especially in off-campus living spaces remains limited.

2.5 Attitude Towards Environmental Sanitation and Personal Hygiene

Attitude reflects how individuals think and behave toward hygiene and sanitation practices, and this can be influenced by social expectations, cultural background, and the conditions

within their learning environment. Positive attitudes toward cleanliness generally promote healthy hygiene behaviors and help maintain a clean environment within the university community (Ezeh et al., 2023).

Female students are often found to practice hygienic behaviors such as frequent handwashing and maintaining proper menstrual hygiene due to heightened social awareness of personal cleanliness (Ogunniyi et al., 2021). However, while attitudes toward personal hygiene may be favorable, environmental sanitation tends to receive less attention. Limited sanitation education and inadequate institutional support for proper waste handling and campus cleanliness contribute to reduced concern for environmental sanitation among students (Akinmoladun et al., 2022).

2.6 Factors influencing the environmental sanitation and personal hygiene practices of female students

The environmental sanitation and personal hygiene practices of female students are shaped by diverse personal, social, and institutional determinants. These factors can either promote or hinder healthy behaviors in the university environment. Key influencing factors include:

1. **Knowledge and Education**: Awareness and understanding of sanitation and hygiene principles strongly influence students' behavior. Health education improves practices related to waste disposal, water safety, and menstrual hygiene (Ogunniyi et al., 2021). Conversely, limited knowledge or incorrect beliefs may result in

inadequate sanitation behaviors and increase health risks (Akinmoladun et al., 2022).

2. **Cultural and Societal Norms**: Societal expectations regarding cleanliness, especially tied to gender, affect how female students approach hygiene. Social norms often emphasize personal hygiene more strongly than environmental sanitation, which can reduce accountability for maintaining clean public surroundings (Chukwuemeka et al., 2020; Bassey et al., 2021). In addition, cultural misconceptions about menstruation may restrict open discussions and affect proper hygiene practices (Ezeh et al., 2023).
3. **Availability and Accessibility of Sanitation Facilities**: Access to functional sanitation infrastructure significantly determines hygiene habits. When restrooms, waste bins, water supply, and private menstrual hygiene spaces are inadequate or poorly maintained, students find it difficult to sustain good hygiene practices (Omoregie et al., 2022; Idris et al., 2021). Research indicates that off-campus accommodation often presents greater sanitation challenges due to poor waste management services (Ekpenyong et al., 2022).
4. **Socioeconomic Status**: Economic conditions influence the ability to obtain hygiene materials such as soap and sanitary pads (Ogunniyi et al., 2021). Students from lower socioeconomic backgrounds may struggle to access these essentials, thereby affecting their hygiene practices and health outcomes (Akinmoladun et al., 2022). Institutional financial constraints may also limit the provision of adequate sanitation facilities (Chukwuemeka et al., 2020).

5. **Peer Influence and Social Networks**: Students are frequently influenced by the hygiene habits of their peers. When peers prioritize cleanliness and environmental responsibility, such behavior is more likely to be adopted. However, the absence of collective support or interest in cleanliness can negatively affect sanitation practices (Omoregie et al., 2022; Ezeh et al., 2023).
6. **Institutional and Policy Support**: University policies and programs that promote sanitation including regular facility maintenance, waste management initiatives, and hygiene education play a crucial role in shaping student behavior (Ogunniyi et al., 2021). Institutions that invest in sanitation facilities and student health campaigns typically achieve better hygiene outcomes (Ekpenyong et al., 2022; Idris et al., 2021).
7. **Health Awareness and Perception**: Students' awareness of disease risks associated with unhygienic conditions influences their motivation to practice good hygiene. Those who recognize the connection between cleanliness and disease prevention are more likely to adopt protective behaviors (Bassey et al., 2021; Akinmoladun et al., 2022). Low perceived susceptibility, however, can lead to neglect of necessary hygiene practices (Omoregie et al., 2022).
8. **Environmental and Climatic Factors**: Weather conditions such as heavy rainfall and high temperatures can affect sanitation practices. Flooding, blocked drainage, and pest infestation during rainy or hot seasons threaten hygiene and increase the risk of diseases like cholera and typhoid (Ogunniyi et al., 2021).

9. **Gender-Specific Challenges**: Female students encounter unique hygiene responsibilities, particularly relating to menstrual care. While they often prioritize personal hygiene, concerns about environmental sanitation such as proper waste management may be less emphasized due to limited education on broader environmental health issues (Bassey et al., 2021; Idris et al., 2021).

2.7 Impact of Hygiene on Health and Academic Performance

Impact of Hygiene on Health

Good hygiene practices are fundamental to preventing various communicable diseases and promoting overall well-being. Regular handwashing, bathing, dental care, and appropriate menstrual hygiene are essential habits that help reduce exposure to infection-causing agents. Among university students, neglecting these practices can increase susceptibility to illnesses that may lead to discomfort, fatigue, and frequent visits to healthcare services, ultimately affecting daily functioning (Akinmoladun et al., 2022).

Challenges such as poorly maintained bathrooms, inadequate waste disposal, and insufficient sanitation structures in university environments can heighten the spread of diseases including cholera, typhoid, and other infectious conditions (Chukwuemeka et al., 2020). Female students, in particular, may be more affected when sanitation facilities do not support menstrual hygiene needs, leading to further health risks (Ezeh et al., 2023). Therefore, maintaining both personal hygiene and environmental sanitation is essential to sustaining a healthy student population.

Impact of Hygiene on Academic Performance

Health and academic success are closely linked. Students who maintain good hygiene are less likely to fall ill, and this reduces absenteeism and supports continuous academic engagement (Idris et al., 2021). Frequent illness can disrupt learning by causing students to miss lectures, fall behind in coursework, and perform poorly on assessments (Akinmoladun et al., 2022).

Additionally, poor hygiene and unclean living conditions can negatively affect emotional well-being. Stress, discomfort, and anxiety associated with unhygienic surroundings can hinder focus and reduce motivation to participate in academic activities (Ezeh et al., 2023).

In contrast, when students feel comfortable in clean and sanitary environments, they tend to exhibit higher confidence and improved concentration, leading to better academic outcomes (Ogunniyi et al., 2021). A supportive hygienic campus environment also reduces distractions and ensures safer conditions for learning. Omoregie et al. (2022) found that universities with strong sanitation systems experience fewer health-related disruptions and improved academic productivity among students.

The strong link between hygiene, health, and learning demonstrates that maintaining proper sanitation is not only a matter of well-being but also a determinant of academic achievement. Female students who consistently adopt personal and environmental hygiene practices are more likely to sustain good health and excel academically, while those facing hygiene challenges may struggle to perform optimally in their studies (Chukwuemeka et al., 2020).

2.8 Challenges in Promoting Hygiene Among Female Students

Ensuring that female university students maintain proper hygiene is vital for their physical well-being and academic success. However, a variety of socio-cultural, economic, and institutional issues continue to hinder the consistent adoption of effective hygiene habits among young women in higher education institutions such as the University of Benin.

1. Socio-Cultural Norms and Gender Expectations

Cultural values and gender-based traditions strongly shape how hygiene is perceived and practiced by female students. In several African settings, issues such as menstrual hygiene are considered private and are surrounded by social taboos, causing many young women to feel ashamed or reluctant to seek information and support (Ezeh et al., 2023). Additionally, traditional gender roles often place the responsibility of cleanliness on women, yet offer limited educational guidance regarding hygienic practices, which results in misconceptions and restricted access to proper hygiene education (Ogunniyi et al., 2021; Chukwuemeka et al., 2020).

2. Limited Access to Hygiene Facilities and Resources

Inadequate sanitation facilities at universities create significant barriers to proper hygiene management. Poorly maintained washrooms, insufficient water supply, and limited availability of sanitary bins discourage regular hygiene activities such as handwashing or menstrual product changes (Idris et al., 2021). These infrastructural challenges negatively affect female students' comfort and can increase their risk of infections (Akinmoladun et al., 2022).

3. Financial Barriers to Hygiene Products

Many female students struggle to afford necessary hygiene materials, especially menstrual products. High costs may force students to resort to unsafe alternatives, which elevate the risk of reproductive and urinary tract infections (Ezeh et al., 2023). The inability to purchase essential hygiene supplies can also lead to psychological distress and hinder academic participation, particularly during menstruation (Akinmoladun et al., 2022).

4. Inadequate Knowledge and Awareness

Knowledge gaps regarding the importance of hygiene still persist among female students. Although hygiene is often discussed generally, there is a lack of targeted education that addresses women's specific hygiene needs and the health risks associated with poor practices (Chukwuemeka et al., 2020). Without structured awareness programs, students are more likely to overlook key practices such as oral hygiene, menstrual care, and proper sanitation behaviors (Omoregie et al., 2022).

5. Peer Influence and Stigmatization

Social stigma remains a barrier to open conversations about hygiene, especially menstruation. Many young women fear judgment from peers and may avoid accessing or carrying hygiene products in public spaces (Idris et al., 2021). Peer dynamics that prioritize appearance over health can also discourage consistent hygiene behaviors, further increasing the likelihood of poor personal hygiene outcomes (Ezeh et al., 2023).

6. Insufficient Institutional Support

The absence of strong institutional initiatives contributes to the persistence of hygiene-related challenges. When universities do not actively promote sanitation and health

education or provide necessary support services such as menstrual health programs, hygienic facilities, and affordable products female students are less likely to prioritize personal hygiene (Ogunniyi et al., 2021; Omoregie et al., 2022). This lack of administrative involvement ultimately undermines students' well-being and academic productivity.

2.2 Theoretical Framework

Health Belief Model (HBM)

The Health Belief Model (HBM) offers a useful explanation for why individuals choose to engage or fail to engage in health-promoting behaviors. The model proposes that when people recognize they are at risk of a health problem and believe that the consequences are serious, they are more inclined to take preventive action, especially if they perceive that the benefits of the behavior outweigh any challenges or obstacles involved.

Originally introduced in the 1950s by public health researchers in the United States, the HBM was designed to understand why people were not utilizing preventive health services. Over time, its application expanded to include adherence to treatment, lifestyle changes, and responses to health conditions. According to the model, a person's motivation to perform a health behavior depends on their desire to avoid illness or recover from it, along with the belief that certain actions can effectively reduce health risks.

The HBM consists of six major constructs that influence behavior:

1. **Perceived Susceptibility**: This describes an individual's belief about their likelihood of experiencing a health problem. The stronger the perception of personal vulnerability, the more likely they are to adopt preventive measures.
2. **Perceived Severity**: This reflects how serious a person believes the consequences of a disease or condition would be. Health threats viewed as severe whether medically or socially tend to motivate stronger behavioral responses.
3. **Perceived Benefits**: This refers to a person's judgment of how effective a recommended action will be in preventing or managing illness. Individuals are more willing to engage in a behavior when they expect positive health outcomes.
4. **Perceived Barriers**: These are the challenges or obstacles a person believes may hinder behavior change. Such barriers might involve cost, inconvenience, discomfort, or fear. The decision to act is influenced by weighing these barriers against the expected benefits.
5. **Cues to Action**: These are triggers that prompt individuals to take action. Cues may be internal, such as symptoms, or external, such as health education messages or advice from peers.
6. **Self-Efficacy**: Self-efficacy refers to confidence in one's ability to successfully perform a behavior. This component was later integrated into the model to acknowledge that belief in one's capability is essential for sustained behavior change

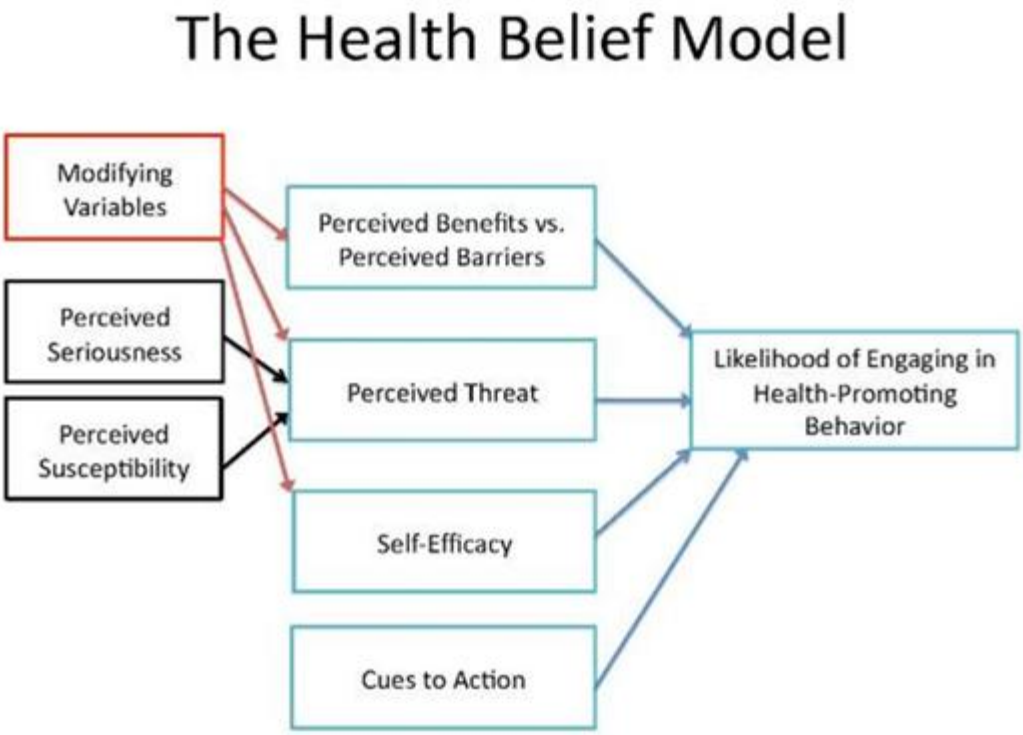


Figure 2.1 Health Belief Model

2.2.2 Application of the theory to the Study

The Health Belief Model (HBM) serves as a relevant framework for this study as it helps to explain how perceptions about health threats and the expected benefits of a behavior

influence personal actions. Applying the HBM to female students' knowledge and attitudes toward environmental sanitation and personal hygiene at the University of Benin highlights key psychological factors that guide their hygiene behaviors and reveals important areas for effective intervention.

1. Perceived Susceptibility: Perceived susceptibility refers to how likely individuals believe they are to experience a particular health problem. Among female students in the University of Benin, the level of awareness regarding vulnerability to hygiene-related illnesses such as urinary tract infections, skin irritations, or menstrual-related infections may determine their commitment to personal hygiene practices. Those who acknowledge that poor hygiene increases their risk of health issues are more inclined to take preventive measures. Conversely, students who underestimate these risks may neglect essential hygiene behaviors. Increasing knowledge about potential health dangers related to poor sanitation can increase students' perception of susceptibility and lead to better hygiene practices.

2. Perceived Severity: Perceived severity involves recognizing the seriousness of the consequences associated with health problems. For female students, understanding the potential outcomes of poor hygiene such as illness, hospitalization, or interruptions to academic activities can motivate better hygiene behavior. When sanitation challenges are viewed as capable of affecting physical well-being and academic progress, students may be more likely to maintain cleanliness in their surroundings and adopt proper menstrual hygiene. If these consequences are perceived as minimal or manageable, hygiene may not be prioritized.

3. Perceived Benefits: Perceived benefits relate to the belief that a behavior will produce positive health outcomes. Female students are more likely to engage in good personal hygiene when they see its value in preventing illness, improving comfort, and enhancing well-being. Recognizing that clean restrooms, sanitary pads, handwashing, and waste disposal contribute to disease prevention and academic productivity strengthens motivation toward proper hygiene. When students link healthy practices with improved academic participation and reduced sick days, the perceived benefits of hygiene become more evident.

4. **Perceived Barriers:** Perceived barriers refer to the limitations or challenges that hinder engagement in healthy behavior. Female students at the University of Benin may struggle with maintaining hygiene due to limited access to sanitation facilities, inadequate provision of water, financial challenges in purchasing hygiene products, or insufficient privacy within campus bathrooms. These obstacles discourage consistent hygiene practices even when students understand their importance. Reducing these barriers through improved infrastructure and accessible hygiene supplies can help promote better hygiene behavior among the students.

5. **Cues to Action:** Cues to action are factors that stimulate individuals to adopt a health behavior. In this study's context, cues may include hygiene awareness campaigns, posters encouraging handwashing, lectures on menstrual hygiene, peer influence, or support from staff and health units within the university. Such reminders serve as external motivation and reinforce the importance of maintaining good hygiene. When students receive continuous

guidance and visible hygiene-promoting messages, they are more likely to take action to protect their health.

6. Self-Efficacy: Self-efficacy represents confidence in one's ability to perform a behavior successfully. Female students are more likely to adopt proper sanitation practices when they feel capable of maintaining cleanliness, managing menstrual hygiene, and making use of available facilities. Providing necessary resources, practical demonstrations, and supportive environments can strengthen students' confidence in their ability to sustain hygiene practices. Empowerment through knowledge and access ensures that students not only understand what to do, but also believe they can do it consistently.

2.3 Empirical Review

2.3.1 Knowledge of environmental sanitation and personal hygiene

Arthur and Imoro (2021) investigated the knowledge and hygiene practices of traders in the Tamale Central Market in Ghana, with particular focus on environmental sanitation. The study aimed to evaluate traders' awareness of sanitation requirements, their hygiene-related behaviors, and the challenges affecting sanitation within the market environment. Data were obtained through questionnaires, interviews, and on-site observations. Findings showed that although traders displayed moderate knowledge about environmental sanitation, many of them failed to apply proper sanitation practices in their daily activities. In contrast, personal hygiene awareness and practice were found to be relatively high among both male (50.1%) and female (49.9%) traders. The study also highlighted several sanitation-related challenges in the market, including inadequate drainage, limited clean water supply, insufficient waste

bins, littering, accumulation of waste, and improper wastewater disposal. Based on the results, the researchers emphasized the importance of strengthening environmental health education and hygiene promotion in public marketplaces. They also recommended the renovation or replacement of the existing toilet facilities, alongside an increased provision of sanitation tools such as waste bins by the Metropolitan Assembly, with possible collaboration from NGOs and related organizations.

Ali et al. (2020) conducted a study to investigate the knowledge, attitude, and practices of personal hygiene among junior secondary school students at Irrua Girls Secondary School in Edo State. The study aimed to assess students' understanding of personal hygiene, evaluate their hygiene practices at the individual level, and provide interventions to improve hygiene behavior. A descriptive research design was employed, using questionnaires to collect data from a total of 120 students, representing the study population. The study formulated null hypotheses, which were tested using one-way ANOVA and t-test at a 0.05 level of significance. Primary data were collected directly through questionnaires, while secondary data were sourced from textbooks, journals, newspapers, and online resources. Data were analyzed using frequency distribution tables and simple percentages, with hypotheses tested using the chi-square statistical method. The findings of the study highlighted the importance of raising awareness about the consequences of poor personal hygiene and reducing the risks associated with unhygienic practices. The study emphasized the need for ongoing monitoring and evaluation of students' personal hygiene behaviors. Additionally, it recommended continuous educational programs to enhance students'

hygiene knowledge and practices. The results of this research also provide a foundation for future studies in this area.

Ahmed (2021) carried out a study to examine the knowledge, attitude, and practices of environmental sanitation among households in Bauchi State, Nigeria. The study aimed to evaluate how households understand and implement environmental sanitation and to determine the relationship between knowledge, attitude, and practice. An ex-post-facto research design was employed, and a total of 810 households were selected from the three senatorial zones of Bauchi State using a multi-stage sampling approach that included simple random, stratified, proportionate, and systematic sampling techniques. Out of the distributed questionnaires, 780 were completed and deemed valid for analysis. The reliability of the instruments for assessing knowledge, attitude, and practice yielded Cronbach's alpha coefficients of 0.82, 0.84, and 0.86, respectively. Data analysis was conducted using one-sample t-tests and Pearson Product Moment Correlation (PPMC) to test the study hypotheses. Findings indicated that households in Bauchi State possessed substantial knowledge of environmental sanitation ($t = 197.876$, $p = 0.00$), maintained positive attitudes ($t = 204.617$, $p = 0.00$), and engaged in good sanitation practices ($t = 189.110$, $p = 0.00$). Furthermore, knowledge of environmental sanitation was found to significantly influence households' attitudes ($r = 0.685$, $p = 0.00$) and practices ($r = 0.714$, $p = 0.00$). The study concluded that households in Bauchi State are knowledgeable about environmental sanitation, display positive attitudes, and engage in effective sanitation practices. Knowledge was identified as a key factor shaping both attitudes and practices. Based on

these findings, the study recommended that government and non-governmental policymakers design action plans to sustain and improve households' knowledge, attitudes, and practices related to environmental sanitation in Bauchi State.

2.3.2 Attitudes towards environmental sanitation and personal hygiene

Osatogbe and Ahmad (2023) conducted a study examining the knowledge, attitudes, and practices regarding sanitation facilities among secondary school students in Sokoto Metropolis. The study aimed to assess students' understanding of environmental sanitation, their attitudes toward hygiene, and their actual behaviors. Data were collected using a combination of cross-sectional surveys, structured observations, and face-to-face interviews. Simple random sampling was employed to ensure each participant had an equal chance of being selected, improving the representativeness and accuracy of the sample. The study revealed a strong correlation between students' knowledge and their attitudes toward sanitation, rejecting the null hypothesis of no association. Despite being aware of sanitation facilities such as toilets, students' attitudes and behaviors toward their use were often inadequate, creating environmental challenges. The study emphasized the need for more creative approaches to hygiene education and active engagement of students in promoting proper sanitation practices.

Jiabei et al. (2020) investigated sanitation and hygiene knowledge, attitudes, and practices among primary school students in rural Northeast China. The study involved 333 student-parent groups and used questionnaires to assess participants' understanding and behaviors, along with direct observations of school sanitation facilities and handwashing

skills using a checklist. While over 80% of students demonstrated adequate knowledge of proper hygiene, limited availability of facilities negatively affected their practices. For example, two schools lacked soap, and 53% of students reported that this hindered their handwashing behavior. The study highlighted the influence of gender, facility availability, and knowledge on hygiene practices and underscored the importance of combining hygiene education with improvements in sanitation infrastructure.

Leelavathi and Reddy (2024) examined women's attitudes toward environmental sanitation in the Anantapur district of the Rayalaseema region, Andhra Pradesh. The study involved 400 women from self-help groups, and data were analyzed using descriptive and inferential statistics, including percentages, mean, standard deviation, t-tests, and ANOVA, to explore how personal characteristics influence sanitation attitudes. Findings revealed that women's caste and age significantly affected attitudes toward cleanliness, drinking water, and sewage disposal, while differences in education influenced self-hygiene, drinking water, and sewage disposal attitudes but not cleanliness. The number of children in a household did not affect sanitation attitudes. Additionally, household heads' age and education affected attitudes toward self-hygiene, drinking water, and sewage disposal but not cleanliness. Gender was found to influence attitudes across all areas. Conversely, family background, including occupation, income, type of family, and home ownership, did not significantly shape women's attitudes toward sanitation, indicating that personal and demographic factors are more influential than family characteristics in forming sanitation-related attitudes.

2.3.3 Factors influencing the environmental sanitation and personal hygiene practices

Kabir et al. (2021) explored the factors that influence sanitation and hygiene practices among students at Shahjalal University of Science and Technology, a public university in Bangladesh. Using the Integrated Behavioral Model for Water, Sanitation, and Hygiene (IBM-WASH), the researchers employed an exploratory qualitative design, including 17 in-depth interviews, 4 focus group discussions (6–8 participants each), and 7 key informant interviews with university staff. Thematic analysis was used to interpret the data, and triangulation was applied to enhance validity. Findings revealed that although students had a fair level of awareness about hygiene, their actual practices were poor. Influencing factors included individual characteristics (e.g., gender, awareness, perception of health benefits), contextual elements (e.g., lack of cleanliness and access to sanitary products), socio-behavioral influences (e.g., peer norms), and university infrastructure limitations (e.g., insufficient female toilets, inadequate monitoring of cleaning activities). The study concluded that improving sanitation and hygiene practices requires multi-level interventions, including better provision of WASH resources, enhanced cleaning services, monitoring of facilities, promotion of hygiene behavior, and the introduction of gender-sensitive infrastructure.

Assefa and Kumie (2024) assessed factors affecting hygiene behavior among school children in Mereb-Leke District, Northern Ethiopia. A cross-sectional design was applied, targeting second-cycle primary school students, with a multi-stage sampling method selecting 528 participants. Data collection involved structured questionnaires and

observational checklists in both home and school settings. Statistical analysis using SPSS and logistic regression identified key determinants of hygiene behavior. Out of the participants, 61.7% demonstrated positive hygiene behavior. Knowledge and practices related to water handling (AOR = 2.24; 95% CI: 1.54–3.26) and handwashing (AOR = 2.36; 95% CI: 1.62–3.45), as well as awareness of these practices, significantly influenced hygiene outcomes. Membership in hygiene clubs, parental health packages, hygiene training, and visits to model schools were also significant factors affecting behavior. The study highlighted the importance of education, awareness programs, and institutional support in shaping children's hygiene practices.

Zulkifli et al., (2020) investigated environmental sanitation among undergraduates at Universiti Teknologi MARA (UiTM), Tapah Campus. The study focused on knowledge, attitudes, perceptions, awareness, and practices related to sanitation among 354 students from various programs. Using multiple linear regression analysis, the researchers found that knowledge, practice, and awareness were key factors influencing students' environmental sanitation behaviors.

Gebreeyessus and Adem (2020) examined knowledge, attitudes, and practices of hygiene among students at Kotebe Metropolitan University. A cross-sectional study design was used, with data collected via structured questionnaires and analysis performed in SPSS v.20. The study also reviewed morbidity records from the university clinic, revealing that respiratory infections (47%), gastrointestinal infections (34%), and eye and skin infections (16%) were most common. Knowledge assessment showed that 60.8% of responses were correct, with

gender differences noted in handwashing knowledge ($p \approx 0.00$). The study also highlighted misconceptions, such as over 50% of students believing that parasites in vegetables were pre-existing rather than acquired through contamination. Attitudes toward hygiene varied by gender, and while some hygiene practices were followed, students generally lacked sufficient knowledge to consistently implement proper behaviors. Overall, the study identified significant gaps in knowledge, attitudes, and hygiene practices among university students.

2.4 Summary of Literature Reviewed

This chapter examined the conceptual and empirical issues relevant to the study. The conceptual review focused on female students' knowledge and attitudes toward environmental sanitation and personal hygiene, as well as the factors that influence their hygiene practices. The study is grounded in the Health Belief Model, which provides a framework for understanding how female students at the University of Benin perceive and respond to health risks associated with poor hygiene. The model's constructs perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy offer insight into the determinants of hygiene behaviors and guide the design of interventions aimed at promoting better sanitation practices.

Environmental sanitation is critical in increasing awareness of health risks, providing the necessary resources, addressing obstacles, and fostering confidence in adopting proper hygiene behaviors. Improved hygiene practices can enhance the overall health and well-being of students, while also positively affecting their academic performance. The

empirical review compared and assessed findings from previous studies on similar topics, highlighting gaps and areas for improvement. This study aims to build on existing research by providing baseline data that can inform policy, guide interventions, and serve as a reference for future studies in the area.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the research methodology that were be applied during this study to understand the knowledge and attitude of female students towards environmental sanitation and personal hygiene in university of Benin. It entails the research design, research setting, target population, sample and sampling technique, instruments of data collection, validity and reliability of instrument, method of data collection, method of data analysis and ethical consideration.

3.1 Research Design

A non-experimental descriptive survey design was utilized in this study. The design was used to ascertain the level of knowledge and attitude of female students towards environmental sanitation and personal hygiene. Also, factors influencing environmental sanitation and personal hygiene practices.

3.2 Research Setting

The study was carried out in the University of Benin (UNIBEN), which is a prominent public university located in Benin City, Edo State, Nigeria. The main campus is located

along the Benin-Lagos Expressway in the Ugbowo area of Benin City. The campus is well-equipped with modern academic facilities, including lecture halls, laboratories, libraries, and specialized research centers. UNIBEN consists of several faculties and departments, each focusing on distinct academic disciplines. The university is structured into the following faculties: Faculty of Agriculture, Faculty of Arts, Faculty of Education, Faculty of Engineering, Faculty of Health Sciences, Faculty of Law, Faculty of Life Sciences, Faculty of Management Sciences, Faculty of Social Sciences Faculty of Science and Faculty of Pharmacy. Also, each faculty houses various departments. The university's academic culture is characterized by a focus on excellence and innovation. It provides a conducive environment for students, with access to experienced faculty members, peer collaboration, and a diversity of resources that support both undergraduate and postgraduate Programs.

3.3 Target Population

In this study, the target population comprises of the Female Students in the Department of Law, University of Benin. The population from the school ethical committee for all levels shows that 600 female students fit the profile for the study, thus, were adopted as the target population.

Inclusion criteria

Female students in the Department of Law, University of Benin.

Female students who are willing to participate voluntarily after providing informed consent.

3.4 Sample Size Determination

The sample size was determined using Taro Yamane's formula to ensure that findings and conclusions from the study can be generalized to the entire population of the study where the sample was derived. Taro Yamane's statistical formula is stated as follows:

$N = N/1+Ne^2$

Where n=sample size

N=population size

e=level of precision (confidence interval)

N=600

e=0.05

n= N/1+N(e)2

$n=600/1+600(0.05)^2$

n=600/1+ 600 ×0.0025

n= 600 /1+1.5

n=600 /2.5

n= 240

10% attrition rate= 10% sample size

= (10/100) x240

=24

Total sample size=240 +24=264

3.5 Sampling Techniques

A simple random sampling technique was used to select two hundred and sixty-four (264)

female undergraduate students from the Department of Law record from the Dean of student affairs; there by giving the student equal chances of being selected for the research study. This was done by distributing questionnaire with the assistance of my colleagues to eligible respondents met during the period of the research.

3.6 Instrument for Data Collection

The instrument for data collection that was used in this study is a self-structured questionnaire; a closed-ended questionnaire was utilized for this study. The questions were carefully structured to get an in-depth information that was relevant to the study from the respondents. The questionnaire has four sections, section A containing socio-demographic data with Four items, section B containing the knowledge of environmental sanitation and personal hygiene with 9 items, section C containing the attitude towards environmental sanitation and personal hygiene with 8 items using a Likert scale and section D factors influencing the practice with 8 items using a Likert scale.

3.7 Reliability of the Instrument

Reliability is consistency of an instrument in collecting the same data, which means appropriateness for use over time. In order to be sure that the instrument was reliable, a pre-testing was done using 10% of the proposed study subjects. 26 female students from other departments were included in pre-testing the reliability of the instrument. Corrections was made where necessary, the reliability of the instrument was confirmed using the Cronbach's alpha test. A Cronbach's alpha value of 0.70 or above was considered acceptable, indicating that the instrument was consistent and reliable in measuring the

constructs of interest.

3.8 Validity of the Instrument

Validity is defined as the extent to which an instrument measures what it is supposed to measure and perform as it designed to perform. Face and content validity was considered in the study. Face validity involves simply looking at the instrument to be used and inspecting them at face value to be sure that it measures what it is supposed to measure. Expert statisticians were consulted with questionnaire to ensure validity. The instrument for the research work was validated by a nurse lecturer an expert statistician and the project supervisor, who scrutinize the content and give approval for its use.

3.9 Method of Data Collection

The questionnaires were distributed to the female students when they come for their lecture in the classroom and this take place upon approval for the study to be carried out. This makes room for easy distribution and collection of the instruments. The sampling technique was applied in distributing the questionnaire. Information on the aim and objectives of the study was shared to the female students before distributing the questionnaire to them. Also, consent form was presented to the female students which they need to sign before participating in the study. The questionnaires were retrieved from the female students on the spot after they fill out their response to ensure complete responses.

3.10 Method of Data Analysis

The descriptive analysis was done by using Statistical Package for Social Science (SPSS)

21.0 version. The data was analyzed according to the research questions; while frequency and percentage tables was used for data presentation and analysis. Result was interpreted and discussed.

3.11 Ethical Consideration

The researcher was aware of the ethical and moral principles associated with data collection from respondents. Privacy which is one of the most important aspects of human rights was maintained. Ethical approval was sought from the university of Benin committee before collection of data. The major ethical principles that was uphold during this study were:

Autonomy: The respondents was not be forced into participating in the research project, the respondents was allowed to make decisions for themselves without coercion.

Maintenance of confidentiality: Throughout this study, the researcher didn't disclose personal details of the respondents like name, phone no and address. Confidentiality was ensured by not divulging the information to others and giving access or control to just the supervisor and the statistician.

Informed consent: The researcher ensure that the respondents had full knowledge of the study, purpose and procedures to be followed, the possible risks and benefits and they gave their full consent before taking part in the study.

Avoidance of plagiarism: Studies was properly referenced.

Freedom from exploitation: In this study, the respondents was assured that the information they released will not be used against them, also financial exploitation was avoided.

Right to fair treatment: All respondents were treated fairly without discrimination, and all those who was interested in the study had the opportunity of participation.

CHAPTER FOUR

RESULTS

This chapter presents the results of this research. The results consist of findings generated from data collected using semi-structured questionnaires.

Table 4.1: Socio-demographic characteristics of respondents

Variable	Category	Frequency (n)	Percentage (%)
1. Age	18–25 years	110	41.7%
	26–35 years	85	32.2%
	36–45 years	45	17.0%
	46–55 years	24	9.1%
2. Year of Study	100 level	30	11.4%
	200 level	55	20.8%
	300 level	70	26.5%
	400 level	65	24.6%
	500 level and above	44	16.7%
3. Religious Affiliation	Christianity	180	68.2%
	Islam	70	26.5%
	Others	14	5.3%

4. Marital Status	Married	50	18.9%
	Single	200	75.8%
	Others	14	5.3%

n=264 respondents

The table above presents the socio-demographic data of the respondents. Majority of the respondents (41.7%) were between 18–25 years, followed by 32.2% in the 26–35 years range. Respondents aged 36–45 years made up 17.0%, while the least represented were those aged 46–55 years (9.1%). In terms of the year of study, the largest group of respondents were in 300 level (26.5%), closely followed by those in 400 level (24.6%). Those in 200 level constituted 20.8%, while the 100 level and 500 level and above students accounted for 11.4% and 16.7% respectively. Regarding religious affiliation, a large proportion of the respondents identified as Christians (68.2%), with Muslims making up 26.5%, and other religions comprising only 5.3% of the total. Lastly, the marital status distribution indicates that the majority of the respondents were single (75.8%), while 18.9% were married, and 5.3% belonged to other categories such as divorced or separated.

Table 4.2: Knowledge of Environmental sanitation and personal hygiene

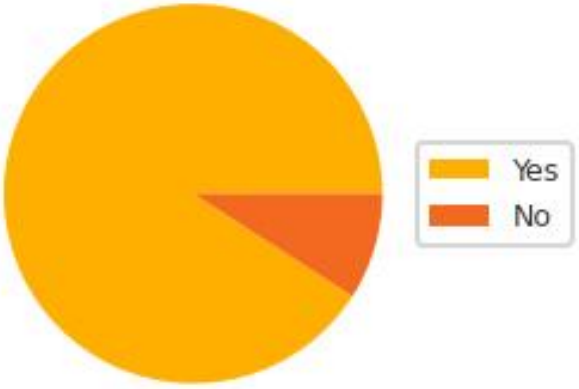
Variable	Yes (n)	Yes (%)	No (n)	No (%)
Do you know the importance of washing your hands regularly to prevent diseases?	240	90.9%	24	9.1%
Do you understand the risks associated with poor environmental sanitation?	220	83.3%	44	16.7%
Are you aware that proper waste disposal can prevent the spread of diseases?	230	87.1%	34	12.9%
Do you know the recommended method for disposing of sanitary products (e.g., pads, tampons)?	150	56.8%	114	43.2%

Are you aware of the importance of bathing daily for good personal hygiene?	250	94.7%	14	5.3%
Do you know that poor sanitation can lead to diseases like cholera, diarrhea, and malaria?	210	79.5%	54	20.5%
Do you know that personal hygiene practices like brushing your teeth and washing your hands can help prevent diseases?	240	90.9%	24	9.1%
Do you know that improper disposal of waste can lead to environmental pollution?	200	75.8%	64	24.2%
Do you know that menstrual hygiene management is an important aspect of personal hygiene for female students?	160	60.6%	104	39.4%

n=264

The table above outlines respondents' knowledge of environmental sanitation and personal hygiene across nine variables. A large majority of respondents reported awareness of key hygiene practices: regular handwashing (90.9%) and the importance of bathing daily (94.7%) to prevent diseases. Similarly, 90.9% recognized that brushing teeth and handwashing help prevent illness, while 87.1% understood proper waste disposal prevents disease spread. Awareness of the risks associated with poor environmental sanitation was high (83.3%), and 79.5% knew that poor sanitation can lead to diseases such as cholera, diarrhea, and malaria. Three-quarters (75.8%) acknowledged that improper waste disposal contributes to environmental pollution. However, knowledge was lower regarding specific aspects: the recommended method for disposing sanitary products (56.8%) and the importance of menstrual hygiene management among female students (60.6%).

Figure 4.1: Interest in Handwashing Practices



The figure above shows the importance of washing the hands regularly to prevent diseases. Majority of the respondents 240 (90.9%) agreed that they wash their hands regularly, while 24 (9.1%) disagreed.

Table 4.3: Level of Knowledge of Environmental Sanitation and Personal Hygiene

	Frequency	**Percentage**
Poor (0-49.9%)	25	9.5
Fair (50-69.9%)	80	30.3

Good (70-100%)	159	60.2

Table 4.3 above shows the level of knowledge of environmental sanitation and personal hygiene. Twenty-five (9.5%) of the respondents have poor knowledge, eighty (30.3%) have fair knowledge, while one hundred and fifty-nine (60.2%) have good knowledge of environmental sanitation and personal hygiene.

Table 4.4: Attitude towards environmental sanitation and personal hygiene

Variable	Agree (n, %)	Disagree (n, %)	Mean	Remark
I believe personal hygiene is essential for preventing health issues.	250 (94.7%)	14 (5.3%)	1.92	Good
I encourage my friends and roommates to practice good personal hygiene.	230 (87.1%)	34 (12.9%)	1.74	Good
I feel that poor environmental sanitation in the university could lead to health problems.	220 (83.3%)	44 (16.7%)	1.66	Good
I believe that university management should do more to ensure proper waste disposal and cleanliness on campus.	240 (90.9%)	24 (9.1%)	1.82	Good
I consider washing my hands before meals to be an important habit.	255 (96.6%)	9 (3.4%)	1.94	Good
I think it is the responsibility of every student to maintain a clean environment in the university.	235 (89.0%)	29 (11.0%)	1.79	Good
I feel that personal hygiene and environmental sanitation have a direct effect on the academic performance of students.	215 (81.4%)	49 (18.6%)	1.48	Poor
I feel uncomfortable when I see waste or litter in my living environment.	245 (92.8%)	19 (7.2%)	1.63	Good
Overall mean score			**1.75**	**Good**

Good Attitude = Mean score > 1.50

The table above presents the attitude of respondents toward environmental sanitation and personal hygiene. Out of the eight items measured, five showed a good attitude (mean score > 1.5), while three items reflected a Poor attitude. Specifically, respondents demonstrated a positive attitude toward behaviors like handwashing, promoting hygiene among peers, and the role of university management. However, there were negative attitudes towards personal accountability and the effect of hygiene on academic performance. The overall mean score of 1.75 indicates a generally positive attitude among

respondents.

Table 4.5: Factors influencing the environmental sanitation and personal hygiene practices

Variable	Agree (n, %)	Disagree (n, %)	Mean	Remark
The behavior of my peers (e.g., roommates, classmates) influences my personal hygiene habits.	175 (66.3%)	89 (33.7%)	1.66	Good
The availability of educational programs and campaigns on sanitation and hygiene affects my practices.	190 (72.0%)	74 (28.0%)	1.72	Good
I believe that socio-economic factors (e.g., financial status, family background) influence the ability to maintain good sanitation and hygiene practices.	210 (79.5%)	54 (20.5%)	1.8	Good
Cultural or traditional beliefs play a role in shaping my views and practices regarding personal hygiene.	110 (41.7%)	154 (58.3%)	1.42	Poor
Environmental factors (e.g., pollution, weather) affect my ability to maintain proper hygiene and sanitation.	160 (60.6%)	104 (39.4%)	1.61	Good
I believe that the university's policies and regulations on sanitation and hygiene influence students' practices.	200 (75.8%)	64 (24.2%)	1.76	Good
Time constraints (e.g., academic workload, extracurricular activities) affect my ability to maintain good personal hygiene.	145 (54.9%)	119 (45.1%)	1.55	Good
I believe that my personal knowledge and education on hygiene and sanitation practices significantly impact my daily practices.	220 (83.3%)	44 (16.7%)	1.83	Good
Overall mean score			**1.67**	**Good**

Good Attitude = Mean score > 1.50

The table above presents the factors influencing environmental sanitation and personal hygiene practices among respondents. The findings showed that most respondents agreed

that variables such as peer behavior, educational programs, university policies, and personal knowledge significantly influence their hygiene practices, reflected by good mean scores. However, a few items, such as cultural beliefs and time constraints, showed lower mean scores, indicating poor influence or perception in those areas. The overall mean score of 1.67 indicates a generally positive perception, suggesting that respondents recognize multiple factors impacting their sanitation and hygiene behavior.

CHAPTER FIVE

DISCUSSION OF FINDINGS

This chapter entails the discussion of findings, implication for nursing, summary, conclusion, recommendation and suggestion for further studies.

5.1 Discussion of Findings

This study sought to evaluate the knowledge and attitudes of female students at the University of Benin concerning environmental sanitation and personal hygiene. It aimed to address key research questions about the students' level of knowledge, their attitudes toward hygiene, and the factors that influence their hygiene practices. A total of 264 female students participated in the study, with data collected through a structured questionnaire specifically developed by the researcher for this purpose.

5.1.1 Knowledge of Environmental sanitation and personal hygiene

The findings of this study indicate that 53.0% of the respondents possessed fair knowledge of environmental sanitation and personal hygiene, while 28.7% demonstrated poor knowledge. This aligns with the study by Arthur and Imoro (2021), which found that traders had fair knowledge of environmental sanitation, though most did not adhere to recommended sanitation practices. Additionally, both males (50.1%) and females (49.9%) showed good knowledge of personal hygiene and practiced it. Similarly, Ahmed (2021) reported that households in Bauchi State were knowledgeable about environmental sanitation and exhibited positive attitudes and good practices. The study also highlighted

that knowledge significantly influenced both attitude and practice among households. Overall, these findings suggest that while there is a general awareness of sanitation and hygiene among the students, there remain areas that require improvement, particularly in specific practices such as menstrual hygiene management and proper waste disposal methods.

5.1.2 Attitude towards environmental sanitation and personal hygiene

In this study, respondents generally demonstrated positive attitudes toward personal hygiene, with 73.0% agreeing that good hygiene practices help prevent health problems. However, certain factors, such as cultural beliefs and time constraints, were identified as barriers that affected their ability to consistently maintain proper hygiene. This contrasts with the findings of Osatogbe and Ahmad (2023), who reported a strong correlation between students' sanitation knowledge and attitudes, yet observed that despite awareness of bathroom facilities, students' attitudes and behaviors toward their use were often unfavorable, creating significant environmental concerns. Similarly, Jiabei (2020) found that inadequate facilities negatively impacted hygiene practices; for instance, the absence of soap in some schools affected 53% of students' handwashing behaviors. Leelavathi and Reddy (2024) also highlighted that gender influences attitudes toward environmental sanitation, with male and female household heads differing significantly across various aspects of sanitation, while family background, such as occupation, income, and type of residence, had minimal impact on attitudes toward cleanliness, self-hygiene, drinking water, and sewage disposal. In the present study, the overall mean score of 1.67 indicates that

although students acknowledge the importance of hygiene, practical barriers still hinder the full adoption of proper hygiene practices.

5.1.3 Factors influencing the environmental sanitation and personal hygiene practices

Based on the findings of this study, several factors were identified as significant influences on students' hygiene behaviors, including peer influence, participation in educational programs, and time constraints. Peer behavior was reported as a key determinant of personal hygiene practices, while exposure to sanitation education positively shaped students' hygiene habits. Additionally, university policies and regulations were found to influence student practices, highlighting the critical role of institutional support. These findings align with Kabir et al. (2021), who identified a complex interplay of factors affecting sanitation and hygiene behaviors among university students. Their study highlighted individual factors (gender, awareness, perception, and perceived health benefits), contextual factors (cleanliness, maintenance, and availability of sanitary products), socio-behavioral factors (norms and peer influence), and infrastructure-related factors (shortage of female toilets and lack of monitoring of cleaning activities) as determinants of students' hygiene practices. Similarly, Assefa and Kumie (2024) found that knowledge, awareness, hygiene training, participation in sanitation clubs, visits to model schools, and parents' health package status significantly influenced students' hygiene behavior. Zulkifli, Jamian, and Zulkipli (2020) also emphasized that knowledge, practice, and awareness are key contributors to environmental sanitation among undergraduates.

5.2 Implication to Nursing Practice

The findings from this study have several important implications for nursing practice, particularly in the context of public health nursing, community health, and nursing education. Nurses play a key role in health promotion, education, and disease prevention, and the results of this study provide valuable insights into how nurses can contribute to improving the hygiene practices and sanitation awareness among university students.

1. **Health Education and Promotion:** Nurses, particularly those working in university health centers or community outreach programs, should focus on increasing awareness about the importance of environmental sanitation and personal hygiene. The study revealed that a significant proportion of the respondents had fair to poor knowledge in these areas, indicating a gap in health education. Nurses can play a pivotal role by organizing workshops, seminars, and health talks on topics such as menstrual hygiene management, waste disposal, and the prevention of hygiene-related diseases. Providing students with reliable information can empower them to take control of their own health practices.

2. **Nursing Interventions in Hygiene and Sanitation:** Nurses should advocate for improved sanitation facilities within university campuses and public spaces. Based on the findings that environmental factors like poor sanitation and inadequate waste disposal contribute to unhealthy practices, nurses can collaborate with university

management to push for better infrastructure. This includes ensuring that there are sufficient cleaning stations, toilets, and waste disposal bins available for students.

3. **Collaboration with Other Healthcare Professionals:** Nurses can collaborate with other healthcare professionals, such as dietitians, environmental health officers, and public health practitioners, to address the multi-faceted nature of sanitation and hygiene. By working together, they can design more effective educational campaigns and prevention programs tailored to university students' specific needs. This collaboration could lead to more comprehensive interventions that tackle both knowledge and attitude towards hygiene and sanitation.

4. **Role in Screening and Early Detection:** Nurses in university health centers should incorporate screening for hygiene-related illnesses such as diarrhea, skin infections, or respiratory issues into routine health check-ups. They can assess the students' knowledge about hygiene practices and offer individual counseling where necessary, ensuring that students are equipped with the knowledge to make informed decisions about their health.

5. **Promoting Behavioral Change:** Given the attitudes observed in this study, nurses must focus not just on educating but also on motivating students to adopt healthy hygiene practices. Nurses can utilize motivational interviewing techniques to encourage behavior change by addressing the barriers to hygiene practices, such as time constraints or cultural beliefs. Furthermore, peer-led health programs, where students act as role models to others, can also be an effective strategy, with nurses providing the

necessary support and guidance.

6. **Incorporating Hygiene Education into Nursing Curricula:** Given the importance of environmental sanitation and personal hygiene in public health, nursing programs should integrate these topics more deeply into their curricula. By doing so, future nurses will be well-prepared to serve as community health leaders, promoting hygiene practices across a range of settings, including university environments, rural areas, and underserved communities.

5.3 Limitation of the Study

The study was with limitation. The respondents may have been biased in their responses to some items in the instrument, since data retrieved were based on self-reported information from them. Also,, the study was conducted with a convenience sample of female students from the University of Benin, meaning the findings may not be fully generalizable to other institutions or male students. Furthermore, the cross-sectional nature of the study limits the ability to draw causal inferences about the relationship between knowledge, attitude, and actual practices. Longitudinal studies could offer more robust findings about how knowledge and attitudes evolve over time and how they translate into lasting behavior change.

5.4 Summary

This study examined the knowledge and attitude of female students at the University of Benin towards environmental sanitation and personal hygiene.The literature reviewed

various works that have previously been carried out in various places concerning level of knowledge, attitude and factors influencing the practice of environmental and personal hygiene. It showed that the poor environmental sanitation and personal hygiene is a global challenge. The research methodology, which is a quantitative descriptive design with a population of 264 respondents from the Department of Law. The population was selected conveniently and data was collected with the use of questionnaire. Data was analyzed using frequency, percentages, mean and standard deviation and were presented in tables where applicable.The findings revealed that while students generally had fair knowledge and positive attitudes about hygiene, gaps existed in their understanding of specific hygiene practices. Factors such as peer influence, socio-economic status, and cultural beliefs influenced their hygiene habits. Although students recognized the importance of hygiene, inconsistencies were observed between their knowledge and actual practices. The findings highlight the need for educational interventions to improve sanitation and hygiene practices.

5.5 Conclusion

In conclusion, while most female students at the University of Benin have a reasonable understanding of personal hygiene and environmental sanitation, their attitudes and practices still require improvement. There is a clear need for more targeted educational programs, peer-led initiatives, and stronger institutional policies to foster healthier hygiene habits. Base on the findings of this study, the researcher suggest that improving awareness and reinforcing positive attitudes can have a significant impact on the overall health and well-being of students.

5.6 Recommendation

Based on the findings of this study, the following recommendations are made:

1. **Regular Hygiene Awareness Campaigns:** The university should organize regular hygiene awareness campaigns and workshops, focusing on critical aspects such as menstrual hygiene management, proper handwashing, and waste disposal.

2. **Peer-Led Hygiene Education Programs:** Peer-led initiatives should be encouraged, where students can lead discussions and campaigns on personal hygiene and environmental sanitation.

3. **Stronger University Policies on Hygiene:** The University of Benin should implement and enforce stricter sanitation policies across the campus, ensuring clean environments in hostels, lecture halls, and common areas.

4. **Improvement of Sanitation Facilities:** Adequate sanitation facilities, including clean toilets, waste disposal bins, and handwashing stations, should be made available in strategic locations across the campus.

5.7 Suggestions for Further Studies

The researcher recommends that further research may be carried out in the following areas:

1. The impact of socio-economic status on personal hygiene practices.
2. Explore the effectiveness of specific educational interventions in promoting hygiene

among university students.

3. Factors Affecting Hygiene Practices.

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APPENDICES

APPENDIX A: INFORMED CONSENT

Faculty of Nursing Sciences,
University of Benin,
Benin City,
Edo State.

Dear respondents,

I am a 500 level nursing student of the above-named institution carrying out a research study on "**KNOWLEDGE AND ATTITUDE OF FEMALE STUDENTS TOWARDS ENVIRONMENTAL SANITATION AND PERSONAL HYGIENE IN UNIVERSITY OF BENIN".** The questionnaire is strictly for collection of data for academic purposes. Please supply the information as frankly as possible to make this study a success.

Rest assured that all the information given by you will be treated with strict confidentiality. Your names and personal identifiers are not required.

Thank you for your acceptance and co-operation.

Yours faithfully,

……..
ABUTO EMMANUELLA OGHOSA

APPENDIX B: QUESTIONNAIRE

SECTION A: Socio-demographic data of respondents

1. Age

18-25years [ ] 26-35 years [ ] 36-45 years [ ] 46-55 years [ ]

2. Year of study

100 level [ ]200 level [ ] 300 level [ ] 400 level[ ] 500 level and above [ ]

3. Religious Affiliation

Christianity [ ] Islam [ ] Others [ ]

4. Marital Status

Married [ ] Single [ ] Others [ ]

SECTION B: Knowledge of Environmental sanitation and personal hygiene

S/N	Variable	YES	NO
5	Do you know the importance of washing your hands regularly to prevent diseases?		
6	Do you understand the risks associated with poor environmental sanitation?		
7	Are you aware that proper waste disposal can prevent the spread of diseases?		
8	Do you know the recommended method for disposing of sanitary products (e.g., pads, tampons)?		
9	Are you aware of the importance of bathing daily for good personal hygiene?		
10	Do you know that poor sanitation can lead to diseases like cholera, diarrhea, and malaria?		
11	Do you know that personal hygiene practices like brushing your teeth and washing your hands can help prevent diseases?		
12	Do you know that improper disposal of waste can lead to environmental pollution?		
13	Do you know that menstrual hygiene management is an important aspect of personal hygiene for female students?		

SECTION C: Attitude towards environmental sanitation and personal hygiene

S/N	Variables	Agree	Disagree
14.	I believe personal hygiene is essential for preventing health issues.		
15.	I encourage my friends and roommates to practice good personal hygiene.		
16.	I feel that poor environmental sanitation in the university could lead to health problems.		
17.	I believe that university management should do more to ensure proper waste disposal and cleanliness in the campus environment.		
18.	I consider washing my hands before meals to be an important habit.		
19.	I think it is the responsibility of every student to maintain a clean environment in the university.		
20.	I feel that personal hygiene and environmental sanitation have a direct effect on the academic performance of students.		
21.	I feel uncomfortable when I see waste or litter in my living environment.		

SECTION D: Factors influencing the environmental sanitation and personal hygiene practices

S/N	Variables	Agree	Disagree
22.	The behavior of my peers (e.g., roommates, classmates) influences my personal hygiene habits.		
23.	The availability of educational programs and campaigns on sanitation and hygiene affects my practices.		
24.	I believe that socio-economic factors (e.g., financial status, family background) influence the ability to maintain good sanitation and hygiene practices.		
25.	Cultural or traditional beliefs play a role in shaping my views and practices regarding personal hygiene.		
26.	Environmental factors (e.g., pollution, weather) affect my ability to maintain proper hygiene and sanitation.		
27.	I believe that the university's policies and regulations on sanitation and hygiene influence students' practices.		
28.	Time constraints (e.g., academic workload, extracurricular activities) affect my ability to maintain good personal hygiene.		
29.	I believe that my personal knowledge and education on hygiene and sanitation practices significantly impact my daily practices.		

APPENDIX C: ETHICAL APPROVAL

RESEARCH ETHICS COMMITTEE

COLLEGE OF MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.

Chairman: Prof. F. A Imarhiagbe
MBChb, FMCP
Cert Clin Res and ethics (NIH), MD.
0803449092

P.M.B 1154, BENIN CITY
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Our Ref: CMS/REC/01/VOL.2/770 **Date:** 16th May, 2025

Re: KNOWLEDGE AND ATTITUDE OF FEMALE STUDENTS TOWARDS ENVIRONMENTAL SANITATION AND PERSONAL HYGIENE IN UNIVERSITY OF BENIN

Name of Principal Investigator: **ABUTO EMMANUELLA OGHOSA**
Department Of Nursing Science,
School of Basic Medical Sciences,
University Of Benin,
Benin City.

REC Approval No: CMS/REC/2024/770

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

This approval dates from **16th May, 2025 to 15TH May, 2026.** In multi-year research, Endeavour to submit your annual report to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

PROF. F.A IMARHIAGBE
Chairman, REC

Promoting best ethical & scientific standard for research in Nigeria