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Evaluation of the Relevance of Hygiene Education and Its Tendency to Prevent Respiratory Infections Among Undergraduates

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Abstract

Respiratory infections are a major cause of illness and death worldwide, and they can be particularly dangerous in healthcare settings. From common colds to more severe illnesses like influenza and COVID-19, these infections can disrupt learning environments and affect academic performance. By teaching proper handwashing techniques, respiratory etiquette, and personal hygiene practices, students can significantly reduce their risk of contracting and spreading respiratory illnesses. This study is made to ascertain the impact of hygiene education among selected Nursing students in Federal University Otuoke. The objectives are to assess the impact of hygiene education in reducing respiratory infections among nursing students, identify barriers to the adoption of recommended hygiene practices among nursing students, identify strategies for maintaining the effectiveness of hygiene education in reducing respiratory infections among Nursing Students in Federal University Otuoke. The target population is 100 Nursing Students of 300 level. To do this, we performed a Descriptive research design. The survey is based on a self-designed validated questionnaire. The results of this study revealed that the most prominent issue is inadequate school resources, with 73.75% of students reporting a lack of soap and hand sanitizer, and 53.75% stating that the bathrooms are not clean and well-maintained. 68.75% admitted being too tired or lazy to practice good hygiene. 68.75% also reported not being in the habit of practicing proper hygiene. ss0.86. Recommendations were made based on the findings that schools should provide sufficient soap, hand sanitizers, and clean water in all facilities. Regular inspection and maintenance of restrooms and handwashing stations should be prioritized to encourage hygiene compliance among students.

***Keywords**: Hygiene; Education; Respiratory; Infection; Health; Practice; Survey; Population; University; Students.*

1. Introduction

Respiratory infections are a major cause of illness and death worldwide, and they can be particularly dangerous in healthcare settings. Nursing students are at increased risk for respiratory infections due to their close contact with patients and frequent exposure to pathogens. Hygiene education can play a crucial role in reducing the risk of respiratory infections among nursing students. In today's fast-paced and interconnected world, the spread of respiratory infections among students poses a significant health challenge. From common colds to more severe illnesses like influenza and COVID-19, these infections can disrupt learning environments and affect academic performance. However, through targeted hygiene education initiatives, we can empower students with the knowledge and skills necessary to prevent the transmission of respiratory infections and promote a healthier school environment (Prado, 2021).

Teaching hygiene is essential in limiting the spread of respiratory diseases among students. Educating students on good handwashing techniques, respiratory etiquette, and personal hygiene habits might help these students to greatly lower the risks of developing and transmitting respiratory

diseases. In fact, handwashing is one of the most efficient strategies to prevent the spread of germs, particularly those that cause respiratory illnesses. By washing their hands regularly with soap and water, students may remove infections from their hands and avoid transmitting such diseases to themselves and others (Ramos, 2020). Another component of hygiene instruction is educating students about respiratory etiquette, such as covering coughs and sneezes with a tissue or elbow. Teaching basic respiratory etiquette can help prevent breathing droplets harbouring viruses or bacteria from landing on others or on surfaces. In crowded or high-risk environments, encouraging face mask use can also minimise the spread of respiratory diseases among students (Ribeiro, 2022). cleanliness instruction can also extend beyond personal cleanliness to a sanitary school environment. Regular cleaning and disinfection of high-touch areas including doorknobs, desks, and shared equipment can help reduce the spread of respiratory diseases inside the school. Good ventilation and air quality can also help reduce the concentration of airborne infections and create a healthier environment for students and staff (Figueiredo, 2022). Hygiene education also empowers students to make educated choices regarding their health and well-being. By providing students with accurate and timely knowledge on respiratory infections, their causes, symptoms, and prevention, students may become advocates for the health and well-being of themselves and their classmates. Armed with this knowledge, they may take responsibility for their actions and embrace healthy behaviours, which can lead to better health (Martins, 2021). Respiratory infections represent a serious global health concern, with large morbidity and mortality rates. Sanitation prevents spreading of microbes just like in hospitals with susceptible people (Machado, 2023). Therefore, hygiene education is essential for reducing the transmission of respiratory illnesses by individuals (healthcare personnel and learners) alike. Hygiene education is the general teaching of knowledge, skills, and attitude about the hygiene of a person and the environment. Its goal is to encourage practices that will prevent the transmission of illnesses and to encourage good health and well-being. Some of the types of hygiene education include; hand hygiene, respiratory hygiene, food hygiene, sanitation, and environmental hygiene. But the researcher says that there are variables that have been contributing to respiratory illnesses among students, for example, inadequate hygiene practices at all times, which have led to not washing hands correctly or washing them well but not for a time that would kill the pathogens. Not knowing how to prevent respiratory illnesses. Staying at student hostels or dorms. Exposure to cigarette smoke and pollutants. Exposure to other sick people filled with bacteria and virus. Inordinate usage of antibiotics and increased antibiotic-resistant microorganisms. Psychological: good stress management. Congested and poorly ventilated schools with no proper hygiene education can promote respiratory infection. In low-resource settings, inadequate hygiene facilities and resources challenge the implementation of basic hygiene practices among students. The absence of clean water and sanitation facilities makes it difficult to wash hands properly, which is essential in preventing respiratory sicknesses (Ekwem et al., 2019). Limited resources (financial, human, etc.) hinder the implementation of thorough hygiene teaching programs in schools. (3) Behavioural barriers: Students may have established habits or reluctance to adapt their routine to maintain consistent hygiene practices. Students Lack Awareness of the Role of Hygiene in Prevention of Respiratory Infections The lack of awareness among students on the role of hygiene in prevention of respiratory infections calls for continuous educational interventions. (2) Peer pressures and social conformity in the school environment could constitute hindrances to creating an environment to change the behaviour about the hygiene practices. This study will educate participants, particularly the health and nursing students of Federal University Otuoke, Bayelsa State, on how they could be made aware of the factors that enhance the personal and environmental establishment of hygiene practices to minimise the spread of respiratory infections and adjust their attitude toward them in the interest of controlling them and promoting their health.

2. Materials and methods

Ethical considerations

This study was considered by the Research Ethics Committee of the Department of Human Physiology, Faculty of Basic Medical Sciences, Federal University Otuoke with Reference: FUO/REC/HP/2026/076.

The researcher maintained the following ethical considerations during the course of the research.

- **Anonymity:** The researcher ensured that the respondents did not give self-identifying details like name thus to ensure anonymity.
- **Confidentiality**: The researcher ensured that all information's provided are treated confidentially.
- **Informed consent:** The researcher ensured that the respondents gave out their approval and acceptance before giving out the questionnaire
- **Respect**: the respondents were respected and approached with courtesy
- **Plagiarism:** the researcher ensured that all works used, ideas referenced.

Voluntary participation: the researcher ensured that the subjects had the right to voluntary decide whether to participate in the study or not without risk of penalty.

Research Design

A cross-sectional study design was adopted in this study.

Study population

The study population was Faculty of Nursing science, Federal University Otuoke, Bayelsa State, Nigeria.

Sample size

Sample size for the investigation was estimated using Taro Yamane formula (Ilochi, 2026). This was relative to the target group such that conclusions and inferences post-survey can be generalised to the rest of the population from which the sample was derived.

$$n = \frac{N}{1+N\,(e)^2}$$

Where N = Population of study (100)

n = Sample size (?)

e = Level of significance at 5% (0.05)

1 = Constant

$$n = \frac{100}{1 + 100(0.05)^2} = \frac{100}{1 + 100(0.0025)} = \frac{100}{1 + 0.25}$$

$$n = \frac{100}{1.25} = 80$$

Therefore; the sample size consisted of 80 Nursing Students.

Sampling method

This research work adopted the convenience sampling technique in selecting the respondents from the total population.

Instrument for data collection

A self-structured questionnaire will be used as the research instrument for collecting data from the respondents. The questionnaires will be administered directly to the participants. The instrument will consist of closed-ended questions structured on a four-point Likert scale (Ilochi & Amadi, 2026). It will be divided into two main sections, namely Sections A and B, with each section designed to address the relevant research objectives. Section A will comprise items designed to obtain demographic information about the respondents, while Section B will contain questions relating to the impact of hygiene education on reducing respiratory infections among nursing students, the barriers to adopting recommended hygiene practices, and strategies for sustaining the effectiveness of hygiene education in preventing respiratory infections. All questionnaire items will be developed in accordance with the research questions and objectives.

Instrument validity

The questionnaire of the study was prepared in the language which all the respondents understand and that was sent to an expert who used his intellectual knowledge to check on errors critically, analytically, and logically and to consider the relevance of the content and statements of the instrument and then to make the instrument valid for the study.

Instrument Reliability

Following validation, the research instrument was subjected to a test–retest procedure to establish its reliability. Ten 200-level nursing students were selected for the reliability test because they shared similar characteristics with the target study population. The same group of students completed the questionnaire

twice, with a 14-day interval between the first and second administrations. The responses obtained from both administrations were analysed using Spearman's Rank Correlation Coefficient to determine the stability and reliability of the instrument. The analysis produced a correlation coefficient of 0.855, approximately 0.86, indicating a strong positive relationship between the two sets of responses. This result demonstrated that the instrument had an acceptable level of reliability and was suitable for use in the main study.

Data collection

As stated earlier, the data for this study were obtained through the use of questionnaires that were administered to the study participants. The questionnaires were distributed to the students in their classroom after lectures. This was to ensure active participation and complete attendance. The researcher approached the students during this time and carefully administered and explained the questionnaires for easy understanding. The questionnaires were answered and collected immediately. The interview lasted for 2 hours.

Data Analysis

The following statistical tools were used for data analysis;

Frequency: This was used to identify the number of occurrences of each respondent chosen by the respondents.

Percentage: This was used in the analysis of the frequency distribution. This was done by taking the frequency in the category divided by the total number of respondents and multiplying by 100%.

3. Results

Table 1: Demographic Characteristics of the Respondents

Demographic Characteristics	Frequency	Percentage (%)
Gender		
Male	7	8.75
Female	73	91.25
Age		
18–25	15	18.75
26–30	65	81.25
31–36	0	0
Level		
100 Level	0	0
200 Level	0	0
300 Level	0	0
400 Level	80	100
Marital Status		
Married	0	0
Single	80	100
Divorced	0	0

Table 1 showed the demographic characteristics of the respondents. A total number of 80 students participated in this study. 91.25% (73) of the respondents were females while 8.75% (7) of the respondents were males. 81.25% (65) of the respondents were in the age range of 26-30 years, 18.75% (15) of the respondents were in the age range of 18-25 years. 100% (80) of the respondents were in 300 level of Nursing Department. 100% (80) of the respondents were single.

Research Question 1: What is the impact of hygiene education in reducing respiratory infection among 300 level Nursing Students in Federal University Otuoke?

Table 2: The Impact of Hygiene Education in Reducing Respiratory Infection Among 300 Level Nursing Students

Statements	SA F(%)	A F(%)	D F(%)	SD F(%)
I have a better understanding of respiratory infections and their prevention after receiving hygiene education.	43(53.75)	27(33.75)	7(8.75)	3(3.75)
Hygiene education has increased my knowledge of proper handwashing techniques.	59(73.75)	9(11.25)	9(11.25)	3(3.75)
I wash my hands more frequently since receiving hygiene education.	27(33.75)	37(46.25)	9(11.25)	7(8.75)
I use hand sanitizer more often since receiving hygiene education.	45(56.25)	19(23.75)	11(13.75)	5(6.25)
I cover my mouth and nose when coughing or sneezing more often since receiving hygiene education.	55(68.75)	13(16.25)	7(8.75)	5(6.25)
Our school has seen a reduction in respiratory infections since implementing hygiene education.	43(53.75)	27(33.75)	7(8.75)	3(3.75)

SA- Strongly Agree, A- Agree, D- Disagree, SD- Strongly Disagree.

Table 2 showed the frequency and percentage responses on the impact of hygiene education in reducing respiratory infection among 300 Level Nursing Students. 53.75% (43) of the respondents strongly agreed that they have a better understanding of respiratory infections and their prevention after receiving hygiene education. 33.75% (27) of the respondents agreed but 8.75% (7) of the respondents disagreed and 3.75% (7) of the respondents strongly disagreed. 73.75% (59) of the respondents strongly agreed that hygiene education has increased my knowledge of proper handwashing techniques. 11.25% (9) of the respondents agreed but 11.25% (9) of the respondents disagreed and 3.75% (3) of the respondents strongly disagreed. 33.75% (27) of the respondents strongly agreed that they wash their hands more frequently since receiving hygiene education. 46.25% (37) of the respondents agreed but 11.25% (9) of the respondents disagreed and 8.75% (7) of the respondents strongly disagreed. 56.25% (45) of the respondents strongly agreed that they use hand sanitizer more often since receiving hygiene education. 23.75% (19) of the respondents agreed but 13.75% (11) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 68.75% (55) of the respondents strongly agreed that they cover their mouth and nose when coughing or sneezing more often since receiving hygiene education. 16.25% (13) of the respondents agreed but 8.75% (7) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 53.75% (43) of the respondents strongly agreed that their school have seen a reduction in respiratory infections since implementing hygiene education. 33.75% (27) of the respondents agreed but 8.75% (7) of the respondents disagreed and 3.75% (3) of the respondents strongly disagreed.

Research Question 2: What are the barriers to the adoption of recommended hygiene practices among Nursing Students in Federal University Otuoke ?

Table 3: Barriers to the Adoption of Recommended Hygiene Practices Among 300 Level Nursing Students

Statements	SA F(%)	A F(%)	D F(%)	SD F(%)
I am too tired or lazy to practice good hygiene.	55(68.75)	13(16.25)	7(8.75)	5(6.25)
Some students in my school come from backgrounds where hygiene practices are not emphasized.	27(33.75)	37(46.25)	9(11.25)	7(8.75)
Our school does not provide adequate soap and hand sanitizer.	59(73.75)	9(11.25)	9(11.25)	3(3.75)
The bathrooms at our school are not clean and well-maintained.	43(53.75)	27(33.75)	7(8.75)	3(3.75)
There are no posters or reminders to encourage hygiene practices in our school.	45(56.25)	19(23.75)	11(13.75)	5(6.25)
I am not in the habit of practicing good hygiene.	55(68.75)	13(16.25)	7(8.75)	5(6.25)

SA- Strongly Agree, A- Agree, D- Disagree, SD- Strongly Disagree.

Table 3 showed the frequency and percentage responses on the barriers to the adoption of recommended hygiene practices among 300 Level Nursing Students. 68.75% (55) of the respondents strongly agreed that they were too tired or lazy to practice good hygiene. 16.25% (13) of the respondents agreed but 8.75% (7) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 33.75% (27) of the respondents strongly agreed that some students in my school came from backgrounds where hygiene practices are not emphasized. 46.25% (37) of the respondents agreed but 11.25% (9) of the respondents disagreed and 8.75% (7) of the respondents strongly disagreed. 73.75% (59) of the respondents strongly agreed that our school does not provide adequate soap and hand sanitizer. 11.25% (9) of the respondents agreed but 11.25% (9) of the respondents disagreed and 3.75% (3) of the respondents strongly disagreed. 53.75% (43) of the respondents strongly agreed that the bathrooms at our school are not clean and well-maintained. 33.75% (27) of the respondents agreed but 8.75% (7) of the respondents disagreed and 3.75% (7) of the respondents strongly disagreed. 56.25% (45) of the respondents strongly agreed that there are no posters or reminders to encourage hygiene practices in our school.23.75% (19) of the respondents agreed but 13.75% (11) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 68.75% (55) of the respondents strongly agreed that they are not in the habit of practicing good hygiene. 16.25% (13) of the respondents agreed but 8.75% (7) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed.

Research Question 3: What are the strategies for maintaining the effectiveness of hygiene education in reducing respiratory infections among Nursing Students in Madonna University, Elele, Rivers State?

Table 4: Strategies for Maintaining the Effectiveness of Hygiene Education in Reducing Respiratory Infections Among 300 Level Nursing Students.

Statements	SA F(%)	A F(%)	D F(%)	SD F(%)
Regular reminders and announcements about hygiene practices are necessary to maintain student awareness.	45(56.25)	19(23.75)	11(13.75)	5(6.25)
Visual aids like posters and banners are effective in reinforcing hygiene education.	59(73.75)	9(11.25)	9(11.25)	3(3.75)
Ensuring adequate soap, hand sanitizer, and clean water availability is crucial.	43(53.75)	27(33.75)	7(8.75)	3(3.75)
Providing hygiene facilities, like handwashing stations, is essential.	55(68.75)	13(16.25)	7(8.75)	5(6.25)
Regular cleaning and maintenance of school facilities supports hygiene practices.	59(73.75)	9(11.25)	911.25)	3(3.75)
Incorporating hygiene education into existing curricula is crucial for long-term retention.	43(53.75)	27(33.75)	7(8.75)	3(3.75)

SA- Strongly Agree, A- Agree, D- Disagree, SD- Strongly Disagree.

Table 4 showed the frequency and percentage responses on strategies for maintaining the effectiveness of hygiene education in reducing respiratory infections among 400 Level Nursing Students. 56.25% (45) of the respondents strongly agreed that regular reminders and announcements about hygiene practices are necessary to maintain student awareness. 23.75% (19) of the respondents agreed but 13.75% (11) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 73.75% (59) of the respondents strongly agreed that visual aids like posters and banners are effective in reinforcing hygiene education.11.25% (9) of the respondents agreed but 11.25% (9) of the respondents disagreed and 3.75% (3) of the respondents strongly disagreed. 53.75% (43) of the respondents strongly agreed that ensuring adequate soap, hand sanitizer, and clean water availability is crucial. 33.75% (27) of the respondents agreed but 8.75% (7) of the respondents disagreed and 3.75% (7) of the respondents strongly disagreed. 68.75% (55) of the respondents strongly agreed that Providing hygiene facilities, like handwashing stations, is essential. 16.25% (13) of the respondents agreed but 8.75% (7) of the respondents disagreed and 6.25% (5) of the respondents strongly disagreed. 73.75% (59) of the respondents strongly agreed that regular cleaning and maintenance of school facilities supports hygiene practices. 11.25% (9) of the respondents agreed but 11.25% (9) of the respondents disagreed and 3.75% (3) of the respondents strongly disagreed. 53.75% (43) of the respondents strongly agreed that incorporating hygiene education into existing curricula is crucial for long-term retention. 33.75% (27) of the respondents agreed but 8.75% (7) of the respondents

disagreed and 3.75% (7) of the respondents strongly disagreed.

4. Discussion

This study presented a collection of data regarding the impact of hygiene education on reducing respiratory infections among 300 Level Nursing Students in Federal University Otuoke, Bayelsa State, Nigeria.

The findings demonstrated the impact of hygiene education in reducing respiratory infection among 300 Level Nursing Students. The findings from the table show that hygiene education has had a positive impact on the 300 level nursing students in reducing respiratory infections. A majority of students (87.5%) reported a better understanding of respiratory infections and their prevention, with 73.75% stating an increase in knowledge of proper handwashing techniques. Hand hygiene behaviors improved, with 80% washing hands more frequently and 80% using hand sanitizer more often. Additionally, 85% of students reported covering their mouths and noses more often when coughing or sneezing. Lastly, 87.5% of students observed a reduction in respiratory infections since the implementation of hygiene education.

The study also showed the responses of the respondents on the barriers to the adoption of recommended hygiene practices among 300 level nursing students. The key findings highlight several barriers to adopting recommended hygiene practices among 300 level nursing students. The most prominent issue is inadequate school resources, with 73.75% of students reporting a lack of soap and hand sanitizer, and 53.75% stating that the bathrooms are not clean and well-maintained. Additionally, 68.75% admitted being too tired or lazy to practice good hygiene, while 68.75% also reported not being in the habit of practicing proper hygiene. Moreover, 56.25% noted a lack of posters or reminders promoting hygiene, and 33.75% pointed to the influence of students from backgrounds where hygiene is not emphasized. The responses of respondents on strategies for maintaining the effectiveness of hygiene education in reducing respiratory infections among 300 level nursing students at the University. The findings suggest that several strategies are essential for maintaining the effectiveness of hygiene education in reducing respiratory infections among 300 level nursing students. The majority of students (73.75%) believe that visual aids, such as posters and banners, are effective in reinforcing hygiene education, and 73.75% also emphasized the importance of regular cleaning and maintenance of school facilities. Regular reminders and announcements were seen as necessary by 80% of students, while 87.5% highlighted the importance of providing hygiene facilities, like handwashing stations, and ensuring the availability of soap, hand sanitizer, and clean water. Lastly, 87.5% agreed that incorporating hygiene education into the curriculum is important for long-term retention.

The study highlights the need for adequate resources, such as soap, hand sanitizer, and clean facilities, to maintain hygiene standards. Nurses should be prepared to advocate for these essential supplies in their work environments, ensuring that both patients and staff are protected from infections. Nursing students, as future healthcare professionals, are expected to serve as role models for good hygiene practices. Their own behavior directly influences patients and other healthcare workers. Therefore, nursing curricula should continue to emphasize personal hygiene and infection prevention behaviors, as students will model these behaviors in practice. The hygiene education program has clearly led to positive behavioral changes among nursing students, as evidenced by the increase in handwashing frequency and the use of hand sanitizers. This indicates that educational interventions can significantly influence personal hygiene habits, especially when students understand the health implications.

The limitations encountered in the study were time constraint, cost constraint and unwillingness of respondents to provide the necessary data.

The time allotted to carry out this study was relatively short considering other academic engagements of the researcher. Due to paucity of funds, the study's coverage was limited to only one university in Bayelsa State. Furthermore, the respondents who are students in the selected institution were somehow unwilling to participate in the survey exercise. Nevertheless, a robust and fact-finding research was carried out.

5. Conclusion

The study explored the impact of hygiene education on reducing respiratory infections, the barriers to adopting proper hygiene practices, and strategies to maintain the effectiveness of hygiene education among 300 level nursing students. The findings revealed that the majority of students gained a better understanding of respiratory infections, improved handwashing practices, and engaged in preventive measures such as covering their mouths and noses when sneezing or coughing. However, barriers such as lack of hygiene resources, poor bathroom maintenance, and student habits hindered the full adoption of recommended practices. To sustain the positive effects of hygiene education, students highlighted the need for regular reminders, visual aids like posters, and adequate hygiene facilities. Ensuring the availability of soap, hand sanitizer, and clean water was seen as crucial. Additionally, incorporating hygiene education into the nursing curriculum for long-term retention was considered essential. Hygiene education has a significant impact on

promoting healthier behaviors among nursing students, but ongoing efforts and resource improvements are necessary to address barriers and maintain its effectiveness in reducing respiratory infections.

Source of funding

The study was funded by the researcher.

Competing interest

There was no competing interest

Informed consent

All participants were duly informed and their consent was obtained before partaking in this study.

Availability of data and material

Not available on request

Ethical approval

This study was approved by Research Ethics Committee of the Department of Human Physiology, Faculty of Basic Medical Sciences, Federal University Otuoke with Reference: FUO/REC/HP/2026/076.

Declaration of Artificial intelligence

Not applicable

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