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Knowledge and Practice of Handwashing for Preventing Communicable Diseases During the COVID-19 Era Among Students in Rivers State-Owned Universities

Kpe-Nobana, C.L.
Department of Human Kinetics, Health and Safety Education, Ignatius Ajuru University of Education, Rivers State, Nigeria

Corresponding author email: christiana.kpenobana@iaue.edu.ng

Abstract
The study investigated the knowledge and practices of handwashing in the prevention of communicable diseases in covid-19 era among students in Rivers State-owned universities. A descriptive survey design was adopted for the study. Three research questions and three hypotheses guided the study. A sample of 400 students was randomly selected from the population of all students in Rivers State-owned universities. A self-structured questionnaire was used to elicit information from the respondents and analysed using SPSS version 26. The research questions were answered using descriptive statistics of frequency and percentage, and the hypotheses were tested using ANOVA at 0.05 alpha level. The findings of the study revealed more than half of students (98.5%) had good knowledge of handwashing. The result further revealed that about half of the students who exhibited poor handwashing practice had a high burden of diseases, while 68.0% of the students demonstrated good handwashing practice. Method of handwashing (F= 4.658, p= 0.010), and level of practice of handwashing (F= 13.595, p= 0.000) had significant influence on the prevention of communicable diseases in COVID-19 era among students in Rivers State-owned Universities while knowledge of handwashing (F= 0.252, p= 0.860) had no significant influence on the prevention of communicable diseases in covid-19 era among students in Rivers State-owned universities. The study concluded that merely knowing handwashing cannot be an intervention for communicable disease prevention. However, when this knowledge of handwashing is translated into handwashing practice is an effective preventive measure against Communicable diseases in the COVID-19 era among students. It was recommended among others that University management should encourage handwashing among students by providing soap and water facilities in appropriate areas around the school environment and teachers should encourage handwashing among the students by enlightening them on the benefits of handwashing in preventing diseases.

Keywords: Communicable Diseases, Covid-9 Era, Handwashing, Knowledge, Practice, Students

Introduction

Communicable diseases remain a global public health concern of the twenty-first century despite the humongous advances in medical sciences and the development of precision medicine. The spread of communicable diseases is exacerbated by globalisation; this has encouraged massive migration to and from different parts of the world in search of greener pastures and more lucrative enterprises. The world is now a global village. Economic globalisation due to advancements in the internet and related communication technologies, has made it possible for people from different walks of life and nationalities to mingle and relate. This ease in transportation and communication has led to the rapid spread of contagions and pathogenic microbes to other parts of the world, which in times past were contained in one area or geographical location. The health implications of such rapid transmission have become a concern to health professionals and the general public (Tulchinsky & Varavikova, 2014; Adams & Petersen, 2016; Velmovitsky et al., 2021).

No wonder, Boone et al. (2016) and Questa et al. (2020) stated that preventable communicable diseases is the leading cause of morbidity and mortality globally, with the highest disease and economic burden occurring in low- and middle-income countries. Communicable diseases are described as illnesses caused by pathogenic agents or their toxins that occur through direct or indirect transmission of the pathogenic agent or their products

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from an infected individual, via an animal, vector, or inanimate environment to a susceptible animal or human host. They are caused by pathogens such as bacteria, fungi, viruses, and protozoa that come in contact with- and contaminate surfaces, body fluids, water, foods, and air thereby causing varying degrees of symptoms depending on the virulence (Edemekong & Huang, 2022; Kandola, 2022). Among the communicable diseases of global importance are malaria, smallpox, measles, cholera, pneumonia, typhoid fever, tuberculosis, typhus, HIV/AIDS, hepatitis, meningococcal among others (Dhingra et al., 2020; meningitis, yellow fever, dengue, anthrax, brucellosis, SARS, Ebola, COVID-19, Gajurel & Deresinski, 2021).

The outbreak of the COVID-19 pandemic seriously undermines the incidence, transmission, and impact of other contagions; thus, disrupting the implementation of health interventions and setbacks in priority programs targeted at the prevention, control, and eradication of communicable diseases. It also exposed and highlighted the weaknesses in our social and health systems as amplified by the disproportionate impacts among the poor and vulnerable population (Espinal et al., 2022). Conversely, the COVID-19 pandemic has significantly improved knowledge on the importance of health for political, economic, and social stability; accelerated and promoted the acceptance of innovations in healthcare services and created distinct chances to strengthen healthcare schemes' resilience in the aspect of current and future healthcare challenges Pan American Health Organization (PAHO, 2021). Research has shown that the prevention of communicable diseases could be systematically achieved. The investment needed to achieve universal coverage demonstrates a high level of affordability and cost-effectiveness (WHO, 2015}. Since communicable diseases have the greatest impacts on the vulnerable populations that are socially and economically marginalised without access to quality healthcare systems, any mitigation programme must involve target-specific innovative, integrated, and sustainable approaches that are economically, socially, technically, and scientifically feasible (PAHO, 2019; Espinal et al., 2022).

Additionally, Szczuka et al. (2021) said that the trajectory of COVID-19 was non-binary as the spread, morbidity, and mortality were recorded across the developed and less developed countries, and effects were evenly felt by rich and poor; thus, highlighting the importance of preventive measures in the fight against all forms of communicable diseases (Rollins, 2020; Thienemann et al., 2020). The national level, case-related population level, and general population level are the three strategic levels into which Adhikari et al. (2020) categorized the preventive approach for adaptation and adoption into three strategic levels namely the national level, case-related population level and general population level. The national strategies involve measures individual nations adopt, such as disease surveillance, isolation protocols, nosocomial prevention, and psychological intervention and management of issues associated with COVID-19 and other communicable diseases. Case-related population intervention includes measures adopted to prevent further transmission of contagions from infected persons in the society; while precautionary measures that significantly lower the risk of exposure to pathogens are part of the general population strategies, these measures can include social distancing, wearing face masks, and concealing coughs and sneezes with tissues or handkerchiefs, avoiding contact with people who are infected, using alcohol-based hand sanitisers, and routine hand washing (Adhikari et al., 2020; Zhou et al., 2020; Pian et al., 2021; Ayouni et al., 2021).

Hand washing is an age-old concept but its relevance to healthy living cannot be over-emphasised. The importance of handwashing in preventing and controlling several communicable diseases was demonstrated during the surge in transmission of COVID-19. Several researches have shown the efficacy of regular handwashing in the prevention of enteric fevers (Cavanagh &Wambier, 2020; Gupta &Lipner, 2020; Rundle et al., 2020; Edemekong & Huang, 2022), and community-based handwashing educational programmes have been reported to reduced transmission of infectious diseases by up to 50-70% (Lee et al., 2015; Haque, 2020). The term “clean care is safer care” was thus used to recommend that hand hygiene is an important indicator of safety and excellent healthcare measures. This ensures the highest quality of care provided at any level of healthcare programs because there is a strong correlation between good hand-washing practices and a low rate of healthcare-associated infections (Haque, 2020). According to Lee et al., (2015) and Rundle et al., (2020), effective hand hygiene is handwashing with soap under running water. Soap was argued to be more efficient in removing pathogenic microbes from hands than washing with water alone. Although antimicrobial soaps are sometimes recommended, studies have shown no significant difference in effectiveness between ordinary soap and antimicrobial soaps in germ removal during handwashing (Tripathi et al., 2020; Hoepfner & Shears, 2021; Matkovic et al., 2021).

The importance of knowledge of hand hygiene cannot be overemphasized. Poor knowledge of appropriate handwashing practices has exposed many to pathogenic organisms with serious health consequences, especially

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in the wake of unabated risks posed by numerous communicable diseases handwashing has been described to be very effective in the prevention of communicable diseases.

For instance, Khan et al (2021) documented the benefits of handwashing practices among children as they reported that involvement in school-based handwashing has effectively increased personal hygiene cognizance, reduced the risk of communicable diseases, and minimized absenteeism among students Unwashed hands after using the toilet, after returning from school, after playing, and before and after preparing food were all associated with the incidence of respiratory illnesses among children. They further reported an association between gastrointestinal infection and hand washing before, during, and after food preparation and then after defecating. Thus, the risks of faecal contamination among school children are greatly reduced when a positive handwashing attitude is inculcated into a child; they can become persuasive in inspiring friends and families to embrace healthier hand-washing practices (Bresee et al., 2016). The importance of handwashing in preventing communicable diseases has been known for centuries, yet it was neglected and invariably relegated to day-to-day living. It was reinvented to prevent and control of coronavirus during its pandemic transmission. Poor knowledge and practice of handwashing might increase susceptibility to respiratory and gastrointestinal infections, and other communicable diseases such as typhoid, typhus, diarrhoea, cholera, anthrax, polio, meningitis tuberculosis, Ebola, and COVID-19, with varying degrees of morbidity, comorbidity, and mortality, which can negatively impact not only health but academic performance.

In Rivers State, it was observed that most Tertiary institutions might lack sanitary facilities at easy disposal to the students on campus. Interaction with the students also revealed that they lack the personal drive to practice hand washing. To the best of the researcher's knowledge, none have been carried out in the study area, especially among Tertiary institutions. Thus, a need to investigate knowledge and practice of handwashing in the prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned universities. The study provided answers to the following research questions.

1. What is the level of knowledge of hand washing among students in Rivers State-owned universities?
2. What is the level of hand washing practice among students in Rivers State-owned universities?
3. What are the methods of hand washing practices among students in Rivers State-owned universities?

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance

1. Knowledge of hand washing has no significant influence on the prevention of communicable diseases in covid-19 era among students in Rivers State-owned universities.
2. The level of hand washing practice has no significant influence on prevention of communicable diseases in covid-19 era among students in Rivers State-owned universities.
3. Methods of hand washing have no significant influence on the prevention of communicable diseases in covid-19 era among students in Rivers State-owned universities.

Materials and Methods

A descriptive survey design was adopted for this study. Thirty thousand four hundred students from the two state-owned Universities in Rivers State made up the study population. The Taro Yamane formula was used to obtain a sample size of 394.81. a non-response rate of 10% was added which gave an approximate of 434. However, to attain equal distribution, the sample size was rounded to 440. A multistage sampling procedure was used to distribute the sample first based on the student's study level (100 Level to 400 Level) fifty-five participants were randomly selected to participate in the study from each level from the two universities. A self-structured questionnaire titled "Knowledge and Practices of Handwashing on Prevention of Communicable Diseases in the COVID-19 Era (KPHPCCE)" was the instrument for data collection. 0.87 was the reliability coefficient. 400 copies of the instrument were filled and returned giving a return rate of 90.91% which were used for the analysis. Data collected were coded and analysed with the aid of Statistical Product for Service Solution (SPSS V-25.0) using descriptive statistics of frequency and analysis of ANOVA at 0.05 level of significance.

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Results

Below are the results of the study

Table 4.1: Frequency and percentage of Knowledge of handwashing

	Yes		No	
Knowledge statements	Freq	%	Freq	%
Handwashing is the proper cleaning of the hands using soap and water	394	98.5	6	1.5
Washing of hands with water alone can effectively remove all pathogens from your hands	58	14.5	342	85.5
Proper handwashing also involves the use of clean cloth to dry the hands after washing	343	85.8	57	14.2
Handwashing is an inexpensive and effective health measure for the prevention of infectious diseases such as COVID-19, cholera, typhoid, etc	340	85.0	60	15.0
Proper handwashing can prevent the spread of disease-causing microorganisms	381	95.3	19	4.7

Table 1 presents the frequency and percentage of knowledge of hand washing among students in Rivers State-owned Universities. The result shows that 98.5% of the students know that handwashing is the proper cleaning of the hands using soap and water, 85.8% know that proper handwashing also involves using a fresh cloth for drying the hands after washing, 85.0% know that handwashing is an inexpensive and effective health measure for preventing communicable diseases like COVID-19, cholera, typhoid, 95.3% knows that proper handwashing can prevent the spread of disease-causing microorganisms. Also, it was observed that 85.5% of the students said that washing hands with water alone can effectively remove all pathogens from your hands.

Table 2: Frequency and Percentage of the Practice of handwashing among students in Rivers State-owned Universities.

	Yes		No	
Practice of Handwashing	Freq	%	Freq	%
Do you wash your hands before eating?	359	89.7	41	10.3
Do you wash your hands after eating?	364	91.0	36	9.0
Do you wash your hands after using the toilet?	334	83.5	66	16.5
Do you wash your hands after returning from school?	262	65.5	138	34.5
Do you wash your hands before preparing a meal?	328	82.0	72	18.0
Do you wash your hands after sweeping and cleaning the floor?	272	68.0	128	32.0
Do you wash your hands after garbage and waste disposal?	325	81.3	75	18.7
Do you wash your hands after playing with friends?	171	42.8	229	57.2

Table 2 presents the frequency and percentage of the practice of hand washing among students in Rivers State-owned Universities. The results revealed that 89.7% of the students washed their hands before eating, 91.0% washed their hands after eating, 83.5% washed their hands after using the toilet, 65.5% washed their hands after returning from school, 82.0% washed their hands before preparing a meal, 68.0% washed their hands after sweeping and cleaning the floor, 81.3% washed their hands after garbage and waste disposal, and 42.8% washed their hands after playing with friends.

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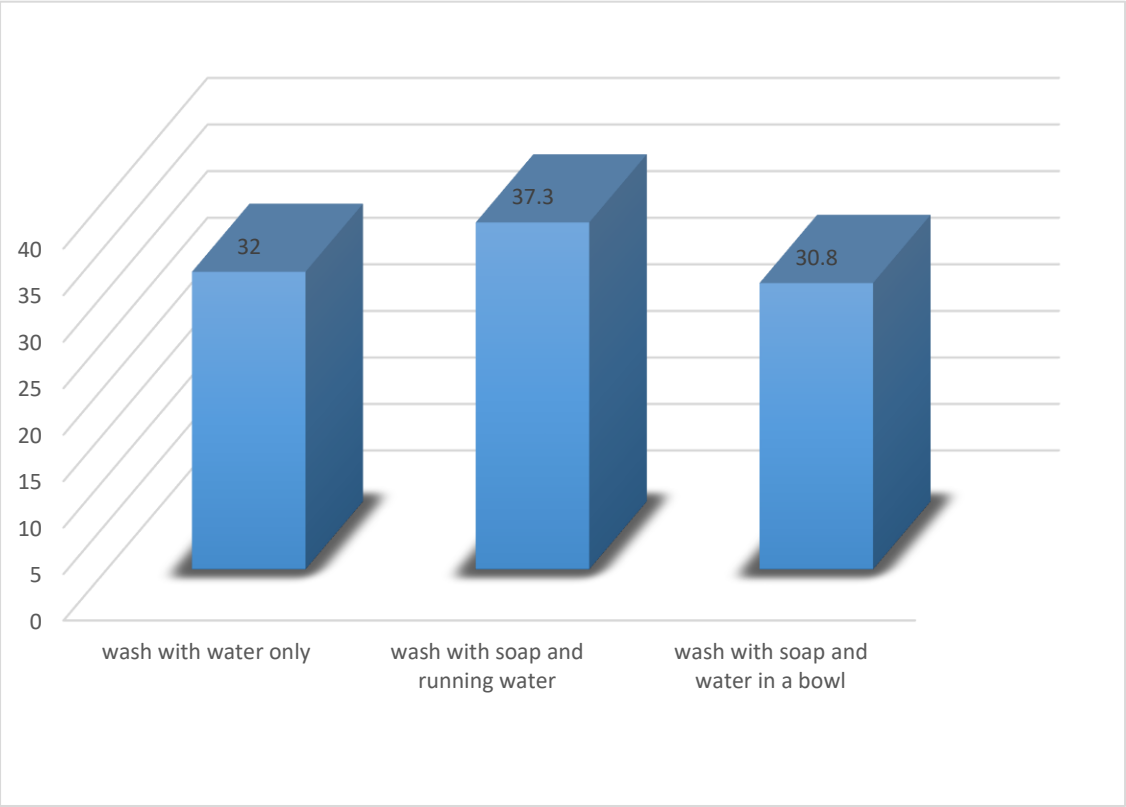

Figure 1: Frequency and Percentage of the Methods of Handwashing among Students in Rivers State-owned Universities.

Figure 1 presents the frequency and percentage of the methods of handwashing among students in State-owned Universities. The result showed that 32.0% of students washed their hands with water only, 37.3% washed their hands with soap under running water, and 30.7% washed their hands with soap and water in a bowl.

Table 3: Analysis of Variance (ANOVA) on the influence of knowledge of handwashing on prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities.

	Sum of Squares	Df	Mean Square	F	p-value	Decision
Between Groups	1.966	3	0.65	0.25	0.86	Not Significant
Within Groups	1029.511	396	2.60			
Total	1031.477	399				

*Significant: $p<0.05$

Table 3 presents the Analysis of Variance **(**ANOVA) conducted to determine the influence of knowledge of handwashing on the prevention of communicable diseases in covid-19 era among students in Rivers State-owned Universities. The result showed that knowledge of handwashing had no significant influence ($F= 0.25$, $p= 0.86$) on the prevention of communicable diseases in covid-19 era among students. Therefore, the null hypothesis which stated that knowledge of handwashing has no significant influence on the prevention of communicable diseases in covid-19 era among students in Rivers State-owned Universities was accepted.

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Table 4: Analysis of Variance (ANOVA) on the influence level of handwashing practice on prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities.

	Sum of Squares	Df	Mean Square	F	p-value	Decision
Between Groups	16.80	6	2.80	13.59	0.00	Significant
Within Groups	80.94	393	0.20			
Total	97.75	399				

*Significant: p<0.05

Table 4 presents the Analysis of Variance (ANOVA) conducted to examine the influence of the level of handwashing practice on prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities. The result showed that the level of handwashing practice had a significant influence (F= 13.595, p= 0.000) on the prevention of communicable diseases. Thus, the null hypothesis which stated that the level of handwashing practice had no significant influence on the prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities was rejected.

Table 5: Analysis of Variance (ANOVA) on the influence of handwashing methods on the prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities.

	Sum of Squares	Df	Mean Square	F	p-value	Decision
Between Groups	2.241	2	1.121	4.658	0.010	Significant
Within Groups	95.509	397	0.241			
Total	97.750	399				

*Significant: p<0.05

Table 5 presents the Analysis of Variance (ANOVA) which was conducted on the influence of methods of handwashing on prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities. The result showed that handwashing methods has a significant influence (F= 4.658, p= 0.010) on preventing communicable diseases. Therefore, the null hypothesis which stated that methods of handwashing had no significant influence on the prevention of communicable diseases in the COVID-19 era among students in Rivers State-owned Universities was rejected.

Discussion

The study result showed that the majority have good knowledge of handwashing as an inexpensive and effective behavioural measure for the prevention of communicable diseases. The result, further revealed that knowledge of handwashing has no significant influence on the prevention of communicable diseases in the COVID-19 era among students (F= 0.252, p= 0.86). This result is encouraging as it implies that the knowledge of handwashing has permeated university students. However, this finding is also expected as it indicates that knowing about handwashing without translating it into practice will not be a preventive measure against infectious diseases The results of this study align with those of Ekeleme (2019), which found that 78.7% of students knew about handwashing, and Nnoye et al. (2020), who found no evidence of a significant correlation between understanding handwashing messaging and practising washing hands. These similarities can be attributed to similarities in location and design. This study's result is consistent with that of Xun et al. (2020), who found that regular hand washing reduced the incidence of illness and that increased hand washing was a protective factor against infection. This study, knowledge and practice of handwashing in the prevention of communicable diseases in the COVID-19 era agreed with Pires et al., (2022) whose study averred that intervention, such as handwashing remained a veritable tool for the prevention of communicable disease transmission in the modern era. The similarities between the previous and present study could be attributed to the similarities in study location and research design.

Conclusion

Based on the results of this study it was concluded that merely knowing about handwashing cannot be an intervention for communicable disease prevention. However, when this knowledge of handwashing is translated into handwashing practice is an effective preventive measure against communicable diseases in the COVID-19 era among students.

Recommendations

Based on the results of the study recommendations were made as follows;

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1. Health educators in schools should endeavour to educate the students to translate their mere knowledge of handwashing into practice to be a potential preventive measure for communicable diseases throughout their lifetime
2. The university's management should encourage handwashing among students by providing soap and water facilities in appropriate areas around the school environment.
3. Parents and caregivers should act as role models for their wards by practicing proper handwashing technique.

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