

Assessment of Undergraduate Students' Environmental Health Knowledge and Practices

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ABSTRACT

The knowledge of anyone about the environment will be the basis in determining how he/she acts regarding environmental hazards. With environmental health been promoted, threats subsist mainly because of individual's behavior and practices in reaction to likely health hazards. This study aims at assessing University of Abuja undergraduate students' (those living outside the school hostel) level of knowledge and associated practices of environmental health with their day-to-day activities. The data for the study was collected using 3 sections (demographic attribute, Knowledge of the Students about the Environment and Environment Practices by the Students) well-structured questionnaire. The findings shows that participants lack general knowledge concerning environmental health-related challenges. The male gender scores (M=69.91, SD=9.9) and Female (M=70.31, SD=10.3) were found not to be significant, $t(238) = -0.309$, $p > 0.05$ with their environmental health knowledge. The interconnection between environment knowledge and practices shares a positive correlation between them ($r = 0.206$, $n = 240$, $p = 0.05$) and statistically significant. It could be submitted that the undergraduate students in this study do not have much knowledge about the environment. Since knowledge influence an individual's style and practice, persisting efforts and dedication in environmental health education ought to be more pronounce and reflect identified environmental health practices and ways to improve.

Keywords: Environmental health, Knowledge, Practice, Students, Abuja

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INTRODUCTION

People are exposed to numerous health risks such as contaminated water, air pollution, heavy metal toxicity, etc. in the environment where they live. Environmental health evaluates how exposure to pollutants impacts the well-being of humans, in addition to determining ways to control or eliminate the pollutants and associated hazards (Ratnapradipa et al., 2011a). Environmental risk perception does affect a person's attitude towards the environment, but these are highly influenced by individual knowledge regarding health risks. It has been reported that six important factors influence individuals' perception of hazards related to environmental health (Fischhoff, and Morgan, 2005). The effect of ecological challenges on human health is one of these factors, along with the potential for mitigating the challenges, the benefits or disadvantages linked to the risks, the mode of influence on an individual, the level of knowledge possessed by the individual regarding the challenges, and the impacts on aesthetic values.

The health behaviors developed in early stages of life have been reported not to change significantly as individuals progress through life (Centers for Disease Control and Prevention (CDC), 2001). In order to develop positive environmental health behaviors by adulthood, it would be beneficial to work with younger age groups to increase awareness and improve individuals' health behaviors (Gutter, 2009). The potential of youth to make and abide by good and productive environmental decisions, as well as their involvement in pro-environmental attitudes, needs to be encouraged and improved (McBeth and Volk, 2010). Environmental education in schools has faced criticism for being biased, emotional, and unscientific (McCrea and deBettencourt, 2000). Removing environmental health from the movement responsible for national educational standards will lead to the spread of literacy in the environmental health sector (Ratnapradipa et al., 2011b).

Environmental health (EH) deals with the quality of human life, which can be influenced by biological, physical, psychological, and social variables present in the environment (Lvovsky, 2001; Zsoka et al., 2013). Additionally, EH refers to the theory and practice of assessing, correcting, donating, and preventing those variables in the environment that can negatively impact public health (Udofia, 2005). Environmental friendliness, behavior, and knowledge are closely interconnected and mutually reinforce each other, especially when it comes to exploring data on environmental challenges (Sarkawi et al., 2017). The interconnection between health and the environment is complex. Different environments impact health in different ways. Environmental epidemiology studies have been carried out to determine the interconnection between pollutants and health-related problems (Udofia and Etukudo, 2003).

Increasing knowledge is essential in addressing environmental challenges. Awareness can help reduce population size (Ehrlich and Ehrlich, 1990), shift consumption patterns (Ehrlich et al., 1999), and generate additional environmentally friendly technologies (Kane, 1996).

Gronhoj and Thogersen (2012) suggested that despite the youth having agreeable environmental behavior, they are not enthusiastic about pro-environmental attitudes, which are largely influenced by their background. It is not enough to simply provide facts, figures, goals, and objectives in the available curriculum for behavioral change (Ajzen et al., 2011; Gifford and Nelson, 2014; Stern, 2011). This study aims to assess the level of knowledge and related practices regarding environmental health among undergraduate students of the University of Abuja who live off campus and engage in day-to-day activities.

METHODOLOGY

Study Area

The main campus of University of Abuja is situated in federal capital territory (FCT), Abuja, Nigeria. It is within latitude 8°58'N and longitude

7°10'E. Anagada village bordered the campus at the north, Giri bounded it on the west, Kuje bounded it on the east, and Gwagwalada town bounded it on the south-west (Enumah et al., 2020). The study focused on undergraduate students across the University of Abuja major campus who lives in various hostels outside the school.

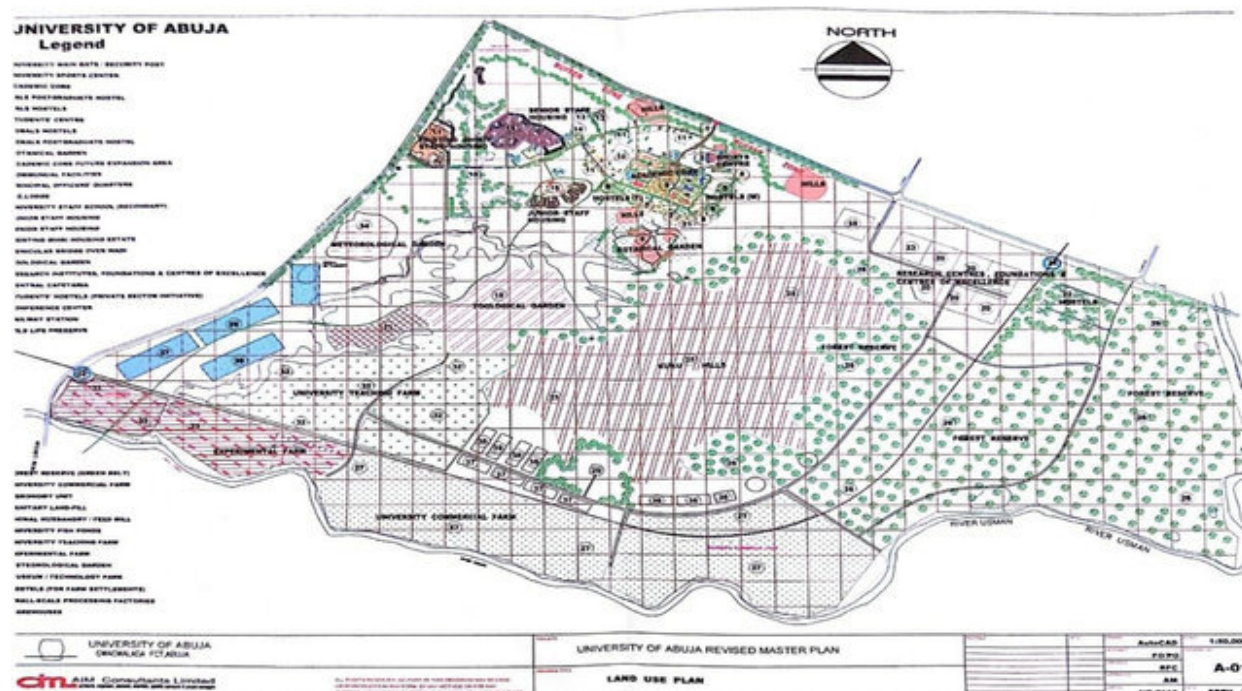


Fig. 1. University of Abuja main campus Map.
Source: Enumah et al. (2020)

Population and Sample Size

The population under study is made up of 800 undergraduates and for the sample size ascertainment, 5% significance level was used. The Yamane formular as used by Olu and Iyere (2020) was used in calculating the sample size.

$$n = \frac{N}{1 + N(e)^2} \quad (\text{Eqn.1})$$

Where

n = sample size

N = studied population

e = Error estimate at 5%

1 = Constant

$$\begin{aligned} n &= \frac{800}{1 + 800(0.05)^2} \\ n &= \frac{800}{1 + 800(0.0025)} \\ n &= \frac{800}{1 + 2.0} \\ n &= \frac{800}{3} = 266.6 \\ &= 267 \end{aligned}$$

Data Collection

This research work data was gathered by employing a well-organized questionnaire as the

sole instrument. This questionnaire was derived from existing literature with some modifications. Similar studies were also used with some modifications.

Reliability of the Instrument

The instrument used for this study, along with the obtained response, was subjected to a reliability test using Cronbach's Alpha in SPSS (version 26). Instrument reliability demonstrates the consistency of the outcomes obtained from the measure (Olu et al., 2022).

Data Analysis

Both descriptive and inferential statistics using SPSS (version 26) were used to analyze the data gathered in this study. In order to evaluate the interconnection between gender and the responses in terms of environmental health knowledge, an independent t-test was utilized at $p < 0.05$. Pearson's product moment correlation coefficient was used to examine the association between environmental knowledge and environmental practices:

RESULTS AND DISCUSSION

A total of 267 questionnaires were produced and self-administered to participants. Unfortunately, 17 of the questionnaires were never returned and

10 questionnaires were not completely filled and this situation left the authors with 240 questionnaires to analyze.

Demographic Characteristics of Respondents

The results from Table 1 show that male respondents constituted 57.1%, while females were 42.9% of the respondents. Of the total respondents, 82.8% were single. Additionally, 78.3% of the respondents were tenants in the houses where they reside, and 64.2% claimed to clean their environment every day.

Participant Demographic Characteristics by Gender

From Table 2, 20.4% of the male students were in their first year at the university, 21.9% were in the second year, 26.3% were in their third year, while 31.4% were in their final year. On the other hand, 35.0% of the female students were in their final year, 18.4% of them were in their first year, 20.4% and 25.2% were in their second and third year, respectively, at the university. This illustrates that the participants are adults and individuals one would expect to have some knowledge about their environment and the status of their academic level in the school at the time this research was conducted.

Table 1: Respondents Demographic Attribute

Variables	Frequency	Percentage
Gender		
Male	137	57.1
Female	103	42.9
Age(years)		
15-25	177	73.8
26-35	36	15.0
36 and above	27	11.2
Marital Status		
Single	199	82.9
Married	41	17.1
Religion		
Christianity	128	53.3
Islam	108	45
Traditional	4	1.7
Academic Level		
100	47	19.6
200	51	21.3
300	63	26.3
400	79	32.9
Housing Status		
Owner	52	21.7
Tenant	188	78.3
Cleanliness		
Everyday	154	64.2
Weekly	70	29.2
Monthly	8	3.3
I don't know	8	3.3

Table 2: Participants Academic Level by Gender

Variables	Gender	
	Male	Female
Academic level		
100L	28(20.4%)	19(18.4%)
200L	30(21.9%)	21(20.4%)
300L	36(26.3%)	27(25.2%)
400L	43(31.4%)	36(35.0%)

Male (N = 137). Female (N = 103, Total= 240)

Knowledge of the Students about the Environment

The findings in this study from Table 3 indicate that the assessment of knowledge of the

respondents about environmental health revealed that the majority of them had a reasonable understanding of environmental practices. As stated by Yusuf et al. (2022), the

reliability test in Cronbach alpha, if at a value >0.9 , >0.8 , >0.7 , >0.6 , >0.5 and <0.5 , is said to be excellent, good, acceptable, questionable, poor, and unacceptable, respectively. The environmental knowledge was found to be highly reliable (18 items; $\alpha = 0.846$). The total score mean for the environmental knowledge items was 70.08 (SD = 10.04).

From Table 3, 63.8% of the respondents strongly agreed that it should be unlawful to engage in smoking activities around children. An overwhelming majority of the participants (74.6%) in this study opined that it should be unlawful to engage in smoking activities around children. This is not surprising considering the set of participants in this study. A similar observation was made in a study by Ratnapradipa et al. (2011b), indicating that the majority of respondents (85.1%) were of the opinion that it should be unlawful to engage in smoking activities around children.

Also, from Table 3, 2.1% of the respondents strongly disagree that exhaust from cars contributes to greenhouse gas impacts, while 46% strongly agreed that exhaust from cars contributes to greenhouse gas impacts. With more attention being directed towards climate change and global warming, it would be expected that university students would strongly agree with the statement that "Car exhaust contributes to the greenhouse gas effect". In this study, 76.8% of the students indicated that they agreed with this assertion. However, in another study by Msengi and Doe (2017), 25% of the respondents were indifferent to the only item on greenhouse gas, with an additional 9% specifying that "Car exhaust does not contribute to the greenhouse gas effect". From Table 3, 18.8% of the respondents were not sure "if recycling has health benefits", 30.8% of the respondents agreed that tap water is safe to drink, and 11.3% of the

respondents disagreed that living in a rural area is less risky than living in a suburban area.

The Environmental Practices Engage on by the students

Cronbach's alphas for the 14 environmental practices items were 0.637. The mean score for the environmental practices items was 33.85 (SD=5.87). 46.7% of the respondents sometimes use hands-free listening devices when using a cellular phone. 58.8% of the respondents almost always keep windows open for good ventilation of their room, while 2.5% almost never do so. 20% of the respondents often listen to music at a high volume. 30.4% almost always take precautions against flooding in their surroundings.

Rawool and Colligon-Wayne (2008) declared that many local college-age adults are not concerned about the risks associated with exposure to loud noises. Therefore, these individuals are unlikely to use hearing protection even when using lawnmowers or other devices that generate loud noise. In this study, when asked about listening to music at a high volume, the overall findings revealed that 61.7% of the participants do not use ear protection, as indicated in Table 4. Additionally, individuals who do use ear protection around loud noises tend to do so occasionally. One possible explanation is that individuals who frequently use protective hearing devices do not find it difficult or strange to do the same when necessary for their work. However, this study did not explore this further. The study also investigated whether more males than females use protective hearing devices. However, these two groups were not significantly different in terms of their knowledge of environmental health, as shown in an independent t-test. Furthermore, according to Table 4, 80% of the students in this study reported washing fruits and/or vegetables before eating them.

Table 3: Knowledge of the Students about the Environment

Item	SD n(%)	D n(%)	NS n(%)	A n(%)	SA n(%)
It should be illegal to smoke around children	48(20)	4(1.7)	9(3.8)	26(10.8)	153(63.8)
Waste resources are preserved by sewage treatment	10(3.3)	8(12.1)	29(38.8)	93(38.8)	100(41.7)
Blockage in pipelines conveying sewage is best removed by sewage treatment	8(3.3)	6(2.5)	33(13.8)	104(43.3)	89(37.1)
Frequent usage of water and soap in washing the hand makes it easier to prevent ailment	6(2.5)	8(3.3)	26(10.8)	101(42.1)	99(41.3)
Car exhaust contribute to greenhouse gas effects	5(2.1)	4(1.7)	49(20.4)	74(30.8)	108(46.0)
Improper sewage treatment can cause diseases outbreak	11(4.7)	4(1.6)	11(4.7)	86(35.8)	128(53.3)
Potential source of radiation exposure consists computer, smoke detectors, TV and ultraviolet light	9(3.8)	13(5.4)	48(20.0)	102(42.5)	68(28.3)
Environmental health issues affect me and/or my family.	9(3.8)	25(10.4)	46(19.2)	102(42.5)	58(24.2)
Carbon dioxide (CO ₂) causes global climate change	7(2.9)	9(3.8)	49(20.4)	102(42.5)	73(30.4)
Lead paint is not a major health concern	33(13.8)	29(12.1)	116(48.3)	46(19.2)	16(6.7)
Radiation emitting from recurrent usage of cell phone and its impact get me worried	7(2.9)	25(10.4)	56(23.3)	99(41.3)	53(22.1)
Recycling has health benefits	9(3.8)	9(3.8)	45(18.8)	83(34.6)	94(38.2)
Noise pollution is a problem	9(3.8)	8(3.3)	20(8.3)	86(35.8)	117(48.8)
Every family should have an emergency plan	5(2.1)	6(2.5)	23(9.6)	98(40.8)	108(45.0)
Human activities are responsible for major global warming.	7(2.9)	7(2.9)	42(17.5)	83(34.6)	100(41.7)
It is less risky residing in a rural area than do the same in a suburban area	23(9.6)	27(11.3)	69(28.8)	67(27.9)	53(22.1)
Tap water is safe to drink	15(6.3)	46(19.2)	67(27.9)	74(30.8)	38(15.8)
Bottled water is safe to drink	8(3.3)	16(6.7)	41(17.1)	109(45.4)	66(27.5)

SA- Strongly Agree, A - Agree, NS- Not Sure, D - Disagree, SD - Strongly Disagree

Test of hypothesis 1

H₀: There is no significant difference between the environmental health knowledge and the gender of the students.

An independent-samples t-test was conducted to compare the total score for knowledge of the environment in male and female students. From table 5, results showed the male gender scores (M=69.91, SD=9.9) and Female (M=70.31,

SD=10.3) and an independent t-test found this pattern not to be significant, $t(238) = -0.309$, $p > 0.05$. Therefore, the H₀ hypothesis which adduce that there is no significant difference between the environmental health knowledge and the gender of the students is accepted and reject H_i hypothesis which adduce that there is significant difference between the environmental health knowledge and the gender of the students.

Table 5: Hypothesis 1 independent-samples t-test

Total Knowledge	Sex	Mean (M)	Standard Deviation (S.D)	T	Df	Significant
	Male	69.91	9.885	-0.309	238	0.758
	Female	70.31	10.293			

This study shows that environmental knowledge is not related to gender, unlike some studies that hold a contrary view. Sarkawi et al. (2017) reported that gender differences have a significant impact on the purchase of eco-friendly materials and environmental knowledge. Additionally, Tikka et al. (2000) found that nature awareness and the environment seemingly depend on gender, as men tend to possess more knowledge about the environment than women. Furthermore, Briggs et al. (2003) discovered that women have lower environmental awareness compared to men. Moreover, Mostafa (2007) also found significant differences in environmental knowledge between men and women.

Test of hypothesis 2

H₀: There is no significant difference between the behavior/practices engaged by a person in reducing or eliminating the risk associated with environmental health issues with respect to their environmental knowledge.

In examining the interconnection between environment knowledge and practices in this study, Pearson product-moment correlation was used and a positive correlation between the two variables ($r = 0.206$, $n = 240$, $p = 0.05$) was statistically significant which made us reject the null hypothesis that adduced that there is no significant difference between the behavior/practices engaged by a person in reducing or eliminating the risk associated with environmental health issues with respect to their environmental knowledge.

Table 6: Hypothesis 2 Pearson's product moment correlation coefficient (r)

		Total score for knowledge	Total score for Practice
Total score for knowledge	Pearson Correlation	1	.206**
	Sig. (2-tailed)		.001
	N	240	240
Total score for Practice	Pearson Correlation	.206**	1
	Sig. (2-tailed)	.001	
	N	240	240

** Correlation is significant at the 0.05 level (2-tailed).

Information around us indicates that anthropogenic activity is continuously contributing to global warming. However, there are different viewpoints on this issue, particularly in the political realm. As a result, only the media and some conspiracy theorists continue to propagate certain beliefs, which suggests that understanding environmental health practices is essential. Tempte and McCall (2001) emphasize the importance of an individual's perception of the dangers associated with environmental practices. Examining students' knowledge of environmental health and their behaviors, it is evident that there is a significant difference between these variables. It is possible that the participants in this study have a low level of knowledge, which consequently influences their decision-making regarding environmental health challenges. Another possibility is that participants provided answers that they believed would please the researchers, rather than based on their actual beliefs about how environmental health problems affect them. Furthermore, it is important to note that knowledge alone does not necessarily predict behavior. In this study, there is a statistically significant correlation between environmental health and environmental practices.

CONCLUSION

With the findings of this study, it can be concluded that undergraduate students at the University of Abuja do not have much knowledge about the environment. This unfortunate fact manifests in the form of reckless attitudes and practices when it comes to protecting oneself from environmental hazards. Since responsible behavior is desired, it is the responsibility of government agencies and non-governmental organizations that are concerned with creating a habitable environment to prioritize education in the field of environmental health. This education should focus on current environmental issues and practices. This study provides insights into areas that require further refinement and investigation:

- Assessing the effectiveness of programs designed to educate students on changes in environmental health practices.
- Expanding the subscales to include elements related to health, thus linking them to health-related sections.
- Extending the research to include different populations (such as graduates and freshmen) within the academic community to assess their level of knowledge and practices regarding the environment.

AUTHORS' CONTRIBUTION

ARIMIYAU, K.: Worked on Manuscript development, questionnaire design and data analysis.

DAVID, J.: Edited the manuscript, designed the questionnaire,

YUSUF, H.O.: Involved in the data interpretation

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CONFLICT OF INTEREST

There is no conflict or biased interest from the authors in conducting this study

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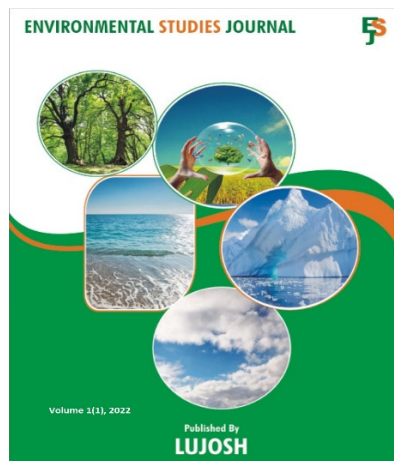
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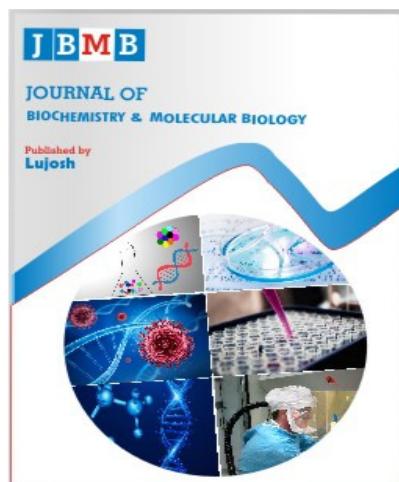
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