Knowledge level of diarrhea among biology students in Enugu state colleges of education

ABSTRACT

Aims: It investigated the knowledge level of diarrhea among college of education students in Enugu state.

Methodology: Descriptive survey research design was adopted for the study. The population of the study was 5673 biology students of colleges of education in Enugu state. The sample size of the study was 284 respondents using the Taro Yamani formula and simple random sampling techniques. The questionnaire was used for data collection.

Results: Based on the analysis, the following major findings were made: the students know the five key research questions. From the findings, the following recommendations were made: lecturers in biology and health Education in different College Education in Enugu State should strengthen their teachings on diarrhea once the students varied in their responses. More research that is scientific should be conducted in the Colleges on the Endemic knowledge of diarrhea as they seem to know little about it. All methods of oral rehydration therapy should be taught to Students and Mothers as a method of management of diarrhea.

Conclusion: The research concluded that the College of Education Students in Enugu State displayed a high level of knowledge regarding the causes, signs, symptoms, transmission, and preventive measures of diarrhea, highlighting the effectiveness of educational initiatives in the region and emphasizing their potential for valuable contributions to public health interventions. Overall, the study underscored the exceptional and extensive endemic knowledge of diarrhea among the students, serving as a valuable resource for enhancing awareness and prevention of diarrheal diseases in the area.

Keywords: Diarrhea, Knowledge, Biology Student, College, Education

1.1 INTRODUCTION

Diarrhea remains a significant public health concern in developing countries across Asia, Africa, and Latin America, where about five million children under the age of five succumb to active diarrhea each year. Around 80% of these fatalities occur within the first two years of life, caused by three major groups of microorganisms: viruses, bacteria, and protozoa or parasites [1]. The impact of diarrhea is underscored by its status as the second leading cause of death among children under five years old, accounting for 525,000 deaths annually [3]. The absence of essential water and salts due to severe dehydration caused many diarrhea-related fatalities in the past, but the emergence of other factors, such as septic bacterial, has added to the gravity of the problem [3].

In the developing world, one-third of infant and child deaths are attributed to diarrhea, with dehydration being responsible for about 70% of these fatalities [4]. Maintaining proper water balance is crucial for survival, as the body relies on water to maintain blood volume and overall fluid balance [4]. This dire situation affects mortality rates and also imposes a considerable social and economic burden, with developed countries experiencing relevant morbidity and associated costs, while in developing nations pediatric populations, diarrhea stands as a frequent cause of mortality [5]. Physicians have used increased frequency of defecation or increased stool weight as major criteria and distinguish acute diarrhea, often due to self-limited, acute infections, from chronic diarrhea, which has a broader differential diagnosis, by duration of symptoms; 4 weeks is a cutoff [6]. To address the alarming rates of diarrhea-

related deaths, it is vital to understand the contributing factors. Poverty, female illiteracy, inadequate water and sanitation, poor hygiene practices, and inadequate health services all play pivotal roles in the high mortality rates, among children under five years old [7]. Malnutrition emerges as a significant risk factor in diarrhea-related fatalities, highlighting the need for proper management and healthcare services [8]. Diarrhea itself is characterized by disturbances in the gastrointestinal tract, leading to increased stool volume and changes in consistency [9]. Nigeria bears a heavy burden of diarrhea-related mortality, with an estimated 151,700 child deaths attributed to the disease, making it the second leading cause of death among children in the country, accounting for 16% of all child fatalities [10; 11].

The prevalence of diarrhea in Nigeria ranges between 10% and 18.8%, and a substantial number of deaths, 80,968, are linked to issues with unsafe water, sanitation, and hygiene [2; 12] This underscores the severity of the problem in Nigeria and also positions the country as a major contributor to diarrhea morbidity and mortality on a global scale.

Elevating awareness of this pressing issue is paramount, in regions where access to healthcare, safe water, and sanitation are limited, as is the case in Enugu state, Nigeria, where colleges of education face similar challenges in dealing with diarrhea cases [13]. Addressing the factors that perpetuate this devastating health concern requires collective efforts and evidence-based strategies to improve the overall well-being of children and communities affected by diarrhea in low-resource settings.

2.1 MATERIAL AND METHODS

Area of Study

The research was conducted in Enugu State, focusing on four Colleges of Education: Federal College of Education, Eha-Amufu, Enugu State; College of Education Technical, Enugu; Peace Land College of Education, Enugu; and The College of Education Nsukka. The College of Education Nsukka was excluded from the study as it does not offer Education in Biology. Hence, the Federal College of Education, Eha-Amufu, and the College of Education Technical, Enugu were chosen for the study due to their Education Biology programs for both N.C.E. and Degree students.

Research design, the population of the study, sample, and sampling techniques

This study adopted a descriptive survey design and the reason for this choice was because the study is aimed at collecting data from students considered representative of the population in assessing students' knowledge level of diarrhea. The population of the study comprised five thousand, seven hundred and seventy-three (5,773 – total population of all students in the two selected colleges of education). The Federal College of Education, Eha-Amufu has a total number of six hundred and forty-five (645) Education Biology students (Nigerian Certificate in Education – 316 & Degree – 329) while Enugu State College of Education Technical has a total of three hundred thirty-six (336) Education Biology students (Nigerian Certificate in Education – 154 & Degree – 182. Both Colleges have a total of 981 Education Biology students. We choose Nigerian Certificate in Education II, Degree II, and Degree III students for this study because they have encountered topics such as "Pollution, Sanitation & Personal Hygiene and Disease" in their previous classes. The sample size of 284 was derived using Taro Yamen's formula:

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

Where:
n = Sample size -?
N = Population of the study – 981
e = Level of significance – 0.05;
1 = Theoretical constant – 1.

Substituting the values in the formula:

$= \frac{981}{1+981(0.05)2}$

$n = \frac{981}{1+981(0.0025)}$

$n = \frac{981}{1+2.4525}$

$n = \frac{981}{3.4525}$

n = 284.14

n is 284.

The instrument for data collection was a questionnaire called Biology Students' Diarrhea Knowledge Level (BSDKL). Questionnaire items were constructed to afford an answer to the research questions formulated to guide the study. The questionnaire consists of five sections. Section A sought information on What causes Diarrhea? Section B sought information on the signs and symptoms of diarrhea. Section C sought information on the mode of transmission of diarrhea. Section D sought information on preventive measures for diarrhea. While section E sought information on endemic knowledge of diarrhea? Four-point scale rating of Strong Disagree (SD), Disagree (D), Agree (A) and Strong Agree (SA) with values of 1, 2, 3, and 4.

2.2 Validity of the instrument

The research instrument was subjected to face validation by giving it to an expert from Measurement and Evaluation and another from Biology Education, all in the Federal College of Education, Eha-Amufu. They were asked to validate the instrument concerning the appropriateness of language used in terms of clarity of statement and adequacy of items of the instrument. The experts also checked whether the instrument responds the questions. Based on the experts, corrections, comments, observations, suggestions, and amendments were made to the instruments before a final copy was produced for the study.

2.3 Method of Data Analysis

The data collected from the respondents were keyed into a Microsoft Excel sheet, and analyses of mean and standard deviation were carried out. A four-point scale of Strong Disagree (SD), Disagree (D), Agree (ASD), and Strong Agree (SA). The scaling statement and the nominal values are SD= 1; D= 2; A= 3; SA= 4. Therefore, Mean = 4+3+2+1 divided by 4 = 2.50. Therefore, 2.50 was the cut-off point for deciding on each item. Any item whose weighted mean was 2.50 and above was considered as agreement while any item that was less than 2.50 was regarded as disagreement.

3.1 RESULTS

The presentation and analysis of data obtained from the administration of the instrument (questionnaire) of the study. The data were organized into five tables in relevance to the five research.

Causes of diarrhea

Table 1, revealed that the majority of students responded that the major causes of diarrhea are bacteria, entering of the parasite into the body through drinking water or eating food, food allergies, reactions from drugs, intestinal diseases such as inflammatory bowel disease, and metabolic conditions such as thyroid problems. The table also shows that the majority of the students disagree with the item that says diarrhea

can result from excessive eating. The standard deviation from items 1, 2, 3, 4, 5, 6, and 7 was high (> 0.5 < 1) which implies that the individual responses deviated from the mean.

Table 1: Causes of diarrhea

S/N	ITEMS	X	SD	REMARKS
1	Diarrhea is a disease caused by bacterial	3.78	0.58	Accepted
2	It can also be caused by the entering of parasites into the body through drinking water or eating food	4.97	0.58	Accepted
3	Food allergies sometimes result in diarrhea	3.09	0.73	Accepted
4	Reactions from medicines can cause diarrhea	2.68	0.78	Accepted
5	Diarrhea often time is caused by an intestinal disease, such as inflammatory bowel disease.	3.11	0.72	Accepted
6	It can result from excessive eating.	2.10	0.79	Rejected
7	Metabolic conditions such as thyroid problems can also cause diarrhea.	3.20	0.82	Accepted
	Total	22.83	Grand mean	3.26

Signs and symptoms of diarrhea

Table 2 indicated that most of the students agreed that the symptoms of diarrhea are frequent stooling and watery stools stains of blood in the stool and fever. The table also revealed that the majority of the students disagreed that rashes on the body and vomiting of blood are not signs and symptoms of diarrhea. The standard deviation from item 3 was high (> 1) which implies the individual response deviated from the mean. The standard deviation from items 1, 2, 3, 4, and 5 was high (> 0.5<1) which implies that the individual response deviated from the mean.

Table 2: signs and symptoms of diarrhea

S/N	ITEMS	X	SD	REMARKS
1	Diarrhea is characterized by frequent stooling and watery Stools	3.42	0.83	Accepted
2	Stains of blood in stools can also indicate diarrhea	3.15	0.82	Accepted
3	Diarrhea causes rashes in the body	1.10	1.37	Rejected
4	Vomiting blood is a sign of diarrhea	2.38	0.99	Rejected
5	Fever also indicates the presence of diarrhea disease in			

	the body system	2.90	0.99	Accepted
Total sum		12.95	Grand mean	2.59

Different modes of transmission of diarrhea

Table 3 revealed that the majority of the students responded that diarrhea can be transmitted through drinking contaminated water, eating contaminated food, intake of rainwater, and practicing poor hygiene. The table also showed that the majority of the students disagreed with the item that said diarrhea can transmit through person-to-person contact, handshaking, and playing in the rain. The standard deviation of all the items was high (>0.5<1) which implies that the individual responses deviated from the mean.

Table 3: Different modes of transmission of diarrhea

S/N	ITEMS	X	SD	REMARKS
1	Diarrhea is contracted by drinking contaminated water	3.61	0.71	Accepted
2	It can also be contacted through contaminated food	3.43	0.72	Accepted
3	Diarrhea can be contacted through person-to-person Contacts	1.98	0.57	Rejected
4	Diarrhea can be transmitted through shaking.	1.70	0.77	Rejected
5	It can be contacted through much intake of rainwater	3.12	0.85	Accepted
6	It can also be contacted by practicing poor hygiene	3.13	0.77	Accepted
7	Diarrhea can be transmitted by playing under the rain	**1.97**	**0.81**	**Rejected**
Total sum		18.57	Grand mean	2.65

Preventive measures for diarrhea

Table 4 revealed that the majority of students agreed that diarrhea can be presented through proper hygiene, keeping a distance from an infected person, drinking clean water, cooking food, health education, and regular sanitation. The table also indicated that the majority of the students disagreed with the item that said, diarrhea can be prevented by eating different kinds of food. The standard deviation of item 3 was high (>1) which implies that the individual responses deviated from the mean. The standard deviation of items 1, 2, 4, 5, 6, and 7 were high (>0.5 <1) which implies that the individual responses deviated from the mean.

Table 4: Preventive measures for diarrhea

S/N	ITEMS	X	SD	REMARKS
1	It can be prevented by practicing proper hygiene	3.49	0.73	Accepted
2	It can be prevented by eating different kinds of food	2.41	0.91	Rejected
3	Keeping a distance from an infected person is also a			

	preventive measure of diarrhea	2.64	1.02	Accepted
4	Drinking clean water prevents diarrhea	3.45	0.76	Accepted
5	Cooking food can also prevent diarrhea	3.38	0.03	Accepted
6	It can also be prevented through health Education on how infections can be spread	3.37	0.89	Accepted
7	Regular sanitation (cleaning the bushes around the house and cleaning our surroundings) plays an important role in diarrhea prevention	3.13	0.64	Accepted
Total mean score		21.87	Grand mean	3.12

V. Fundamental aspect of diarrhea

The table showed that almost all the students disagreed with the item that said diarrhea affects all children under the age of five all over the nation. The standard deviation for item 2 was low (less than 0.5) which implies that the individual response did not deviate from the mean while items 1, 3, 4, 5, 6, and 7 were high (>0.5, <1) which implies that the individual responses deviated from the mean.

Table 5: **Fundamental aspect of diarrhea**

S/N	ITEMS	X	SD	REMARKS
1	Diarrhea is a disease that affects children under the age of five all over the world nation	3.55	0.69	Accepted
2	it has the same signs and symptoms as all the children suffering all over the nation	3.09	0.44	Accepted
3	Diarrhea affects children under the age of five all over the nation	2.13	1.00	Rejected
4	Diarrhea disease has no particular part or specific part of the Nation it affects	3.27	0.84	Accepted
5	If not taken care of it can kill the children under the age of five over the nation	3.39	0.76	Accepted
6	Preventive measures should be taken by nursing mothers over the nation	3.04	0.93	Accepted
7	Proper hygiene should be established all over the nation	3.58	0.95	Accepted

Total mean score	22.23	Grand mean	3.18

4.1 DISCUSSION

The research conducted on students from Colleges of Education in Enugu State has revealed a remarkable depth of knowledge regarding the causes of diarrhea. Students demonstrated an understanding of the various bacterial culprits, such as Shigella, Escherichia Coli, Vibrio cholera, and Salmonella typhi, as well as parasites and metabolic conditions, such as inflammatory bowel disease and typhoid problems [1]. This awareness is expected to have a positive impact in reducing the incidence of diarrhea, as an informed populace can take necessary precautions and preventive measures.

Regarding the signs and symptoms of diarrhea, the students' responses were comprehensive and accurate. Frequent stooling with a watery consistency, the presence of blood in the stool, vomiting, and fever were all identified as indicative of the condition. It was also acknowledged that frequent watery stools can lead to dehydration and damage to the intestines, when accompanied by loss of appetite and vomiting [14]. Armed with this knowledge, students can recognize the onset of diarrhea and seek appropriate treatment, thereby preventing the condition from escalating into a severe state. This ensures better health outcomes and also translates into cost savings for students in terms of medical expenses.

Furthermore, the students' awareness of the modes of transmission for diarrhea, which encompass contaminated food and water, as well as poor hygiene practices [15]. This heightened understanding of transmission pathways empowers students to adopt better hygienic practices and avoid potential sources of infection, reducing their risk of contracting diarrhea. As a result, improved hygiene practices are expected to become more widespread among the student population.

The study also shed light on the student’s knowledge of preventive measures against diarrhea. These measures encompass the practice of good hygiene, maintaining distance from infected individuals, consumption of clean water, proper food preparation, health education, and regular sanitation [12]. Students are to protect themselves and others from diarrhea, leading to a decline in the overall propagation of the condition.

The research revealed that the students possessed substantial knowledge about the endemic nature of diarrhea, its impact on children under the age of five across the nation. The consistent signs and symptoms of diarrhea were acknowledged, emphasizing the need for nationwide efforts to establish proper hygiene practices and implement preventive measures, among mothers [16]. This broader awareness within the student body of Colleges of Education is anticipated to contribute to the national efforts aimed at curbing the spread of diarrhea.

In conclusion, the research conducted on students from Colleges of Education in Enugu State demonstrates their impressive grasp of the causes, signs, symptoms, transmission, and prevention of diarrhea. Armed with this comprehensive knowledge, the students are well-positioned to make informed decisions, take appropriate precautions, and adopt healthier practices. The collective effort of these educated individuals is expected to play a crucial role in reducing the prevalence of diarrhea, improving public health outcomes, and lowering the financial burden of healthcare expenses associated with the condition.

5.1 CONCLUSION

College of Education Students in Enugu State displayed a high level of knowledge regarding the causes, signs, symptoms, transmission, and preventive measures of diarrhea, highlighting the effectiveness of educational initiatives in the region and emphasizing their potential for valuable contributions to public health interventions. The study demonstrated the knowledge of the students on diarrhea, serving as a valuable resource for enhancing awareness and prevention of diarrheal diseases in the area.

6.1 Educational Implication of the Research

Diarrhea exerts a profound impact on students, not physical alone but also psychological. Any illness or other condition suffered by a student that prevents them from attending classes and practicing what they have learnt, causes low academic performance, diarrhea inclusive, as it hinders their ability to engage in

their studies. The study addressing preventive measures for diarrhea holds significant promise in mitigating or even eradicating the adverse effects of this condition on students' academic performance.

Empowering students with a deeper understanding of diarrhea's causes, prevention strategies, and the importance of maintaining good health will equip them to make informed decisions and adopt healthier practices. As a consequence, the occurrence and severity of diarrhea can be curtailed, allowing students to focus more on their studies and academic pursuits.
In essence, this research helped in bolstering the overall academic well-being of students. By addressing the issue of diarrhea and its impact head-on, educators and policymakers can foster a healthier and more conducive learning environment, enabling students to unlock their full potential and achieve better educational outcomes.

Consent

Not applicable.

Ethical approval

Not applicable.

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