

EFFECT OF ENVIRONMENTAL HEALTH EDUCATION INTERVENTION ON CONTROL MAINTENANCE AND PROMOTION OF PROPER DEFECACTION AMONG THE STUDENTS OF BOARDING SECONDARY SCHOOLS IN KATSINA STATE

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Abstract

This study was conducted to examine the effectiveness of environmental health education intervention on control, maintenance and promotion of proper defecation among the students of boarding Secondary Schools in Katsina State. The study employed a quasi-experimental design using pre-test and post-test control group design. The population of the study comprise of all twenty three (23) boarding secondary schools in Katsina state, with total population of one thousand three hundred and twenty five (1325). The sample for the study comprise of one hundred and twenty two (122) SSII Students. The study was conducted in two boarding secondary schools in Katsina State. The schools were selected using simple random sampling of fish-bowl method in each of the two schools using intact science class. The instrument used was to collect that was Control, Maintenance and Promotion of proper Defecation Questionnaire (CMPQ) with internal consistency reliability index of 0.881 obtained using Cronbach Alpha. The research question was answered using mean and standard deviation while the hypothesis was tested at ($P < 0.05$) using Analyses of Covariant (ANOVA). The result revealed that students in the intervention school had high mean the knowledge of control, maintenance and promotion of proper defecation after the intervention. Based on this, it was recommended that seminars and workshops for Teachers of senior secondary schools on Environmental health education to enhance students' knowledge of control, maintenance and promotion of proper defecation and general Hygiene should be organized.

Keywords: Environmental education intervention, Control, Maintenance, Promotion, Proper Defecation

Introduction

Environmental education interventions are important for increasing awareness, altering behavior, and encouraging proper defecation practices especially in locations where open defecation is common or where sanitary infrastructure is weak. Interventions in environmental education have proven successful in encouraging behavior change with relation to proper defecation practices (Ambusaidi, 2022). People have been inspired to adopt proper defecation practices thanks to this knowledge, community involvement, and participatory ways. According to Astuti, Kasmini, and Indriyanti, (2021) the interventions in environmental education emphasize the negative environmental effects of open defecation, such as water pollution and food source contaminations. These measures aid in environmental preservation and good defecation habits, which assist safeguard water supplies. These initiatives aim to raise awareness of the value of utilizing good sanitation facilities and the health, hygiene, and environmental problems associated with open defecation among individuals and communities (Astuti, 2021). According to Edsand and Broich, (2020) Environmental education (EE) is a procedure that enables people to use their newly gained information and abilities in the real world to take care

of their environment. EE has been acknowledged as one of the techniques to assist reduce a number of environmental challenges worldwide. The goal of EE, is to create a population that is literate about the environment. This is accomplished, among other things, by educating citizens about the environment and how to manage their impact on it (Edsand & Broich, 2020; Ambusaidi, & Al Fulaiti, 2022).

According to Forte, Andrade, Lowry, Butler, Bliss and Kane (2016) following digestion, an essential procedure called defecation is used by organisms to expel the solid, semisolid, or liquid waste product known as feces through the anus. The act is known by many different names, such as "making doo-doo," "going number two," "dropping a deuce," or "taking a dump," as well as more common terms like "pooping" or "crapping" and more technical terms like "bowel movement." The subject, which is typically avoided in polite society, might serve as the inspiration for some crude humor. The operation and health of the human body's digestive system are determined by regular bowel movements. The most frequent regular bowel movement that removes waste from the human body is defecation. It is difficult to determine the frequency of feces, which can range from daily to weekly base on personal bowel habits, the influence of the environment, and genetics (Nath, & Singh, 2017). An urgent solution is required for the social and health issues associated with open defecation. 41 million homes, or around 17 percent of all households, defecated outside in 2010 (UNICEF, 2020). One of the habits that people develop as a result of modeling the conduct of those around them is the practice of open defecation and not using the restroom. The head of the family plays the most important function there (Astuti, Kasmini, & Indriyanti, 2021).

Different scholars worked on proper defecation, Ayalew, Mekonnen, Abaya, and Mekonnen, (2018) conducted a research on Assessment of diarrhea and its associated factors in under-five children among open defecation and open defecation-free rural settings of Dangla District, Northwest Ethiopia. Their result indicated that child immunization, latrine presence, water shortage in household, and solid waste disposal practices had statistically significant association with diarrhea occurrence in ODF kebeles, while water access at the individual level, water shortage in household. Also Sarkin Gobir, and Sarkin Gobir (2017) worked on Open defecation, a threat to public health and sustainable development goals: a case study of Gwadabawa Local Government, Sokoto state. according to them, most of the respondents (37.5%) believed that OD leads to water pollution, 30% opined that it Facilitates Fecal oral transmission of diseases, 17% accepted that it is a threat to public health. 10.0% were of the views that OD is a factor of diarrhea ,trachoma, cholera, typhoid, polio and so on.

Attitudes towards proper toilet use practice of open defecation, reasons for engaging in open defecation and strategies for reducing open defecation were discussed. In the light of the above, it was discovered that OD is a big threat to public health. Keywords: Open defecation, public health, Sustainable development goals. Furthermore, Dey (2018) conducted a study on Causes and consequences of open defecation and improper sanitation: A study in Polempur village, Khandaghosh Block, Bardhaman. According to him, improper sanitation and open air defecation are the basic problems which cause environmental degradation and several health problems of the villagers in Polempur. Many people in the village suffer from the water-borne and sanitation-related diseases which are mainly caused by the aforesaid problems. But it is also the fact that the sanitation-related problems of Polempur can be mitigated and tackled if the village people become more conscious about the adverse effect of open defecation and improper sanitation. However, it is significant to remember that the success of environmental education interventions might change based on the surrounding circumstances, cultural norms, and the particular methods employed. The purpose of the current study is to explore the effectiveness of environmental education intervention on control, maintenance and promotion of proper defecation among the students of boarding Secondary Schools in Katsina State.

Objectives of the Study

The objective of the study examined effectiveness of environmental education intervention on control, maintenance and promotion of proper defecation among the students of boarding Secondary Schools in Katsina State.

Research Question

1. What is the mean difference in the level of knowledge of control, maintenance and promotion of proper defecation between the intervention school students and the control school students?

Research Hypothesis

One hypothesis was formulated for this study:

H₀: There is no significant difference in the level of knowledge of control, maintenance and promotion of proper defecation between the intervention school students and the control school students.

Methodology

The design for this study was a quasi-experimental design using pre-test and post-test control group. Both the intervention school students were pre-tested before the intervention took place, thereafter the intervention was carried out by researcher with the help of research assistants which are the teachers of the selected schools to the intervention school students for three weeks. First week the researcher explained the concept proper defecation and how to control, second week was for maintenance and the third week was for promotion of proper defecation respectively, thereafter both the intervention and control school students were given post-test. The population of the study comprise all twenty three (23) boarding secondary schools in Katsina state, with total population of one thousand three hundred and twenty five (1325) Stratified random sampling technique was to divide the population in to three zones in Katsina state namely: Katsina zone, Daura zone and Funtua zone. In each strata, one school was selected using simple random sampling technique of fish-bowl method to select two schools out of the selected three schools. From the two (2) schools that were randomly selected, one (1) of which was randomly assigned as intervention school while the other one control school, in each of the schools, SS II science intact class was used for the study. The sample consists of one hundred and twenty two (122) SS 2 students, 65 for experimental group and 57 for control group.

The instrument used for the study was Control, Maintenance and Promotion of proper Defecation Questionnaire (CMPQ). The instrument was validated by three experts from Human Kinetics and Health Education Department of Federal University Dutsin-Ma. A pilot test was conducted to establish the reliability of the instruments on a group of twenty (20) SS 2 science students of Government Girls Arabic Secondary School Dutsin-Ma which is outside the sample of the study. The internal consistency reliability index obtained using Cronbach Alpha was 0.881 which indicates a high reliability index. This indicates that the instrument is reliable. Research assistant was selected from among the staff of the school intervention school. The research assistant was trained for the conduct of the study. The researcher with the help of an assistant conducted an intervention on: "Effectiveness of environmental education intervention on control, maintenance and promotion of proper defecation" among the sampled students. The collected data was analyzed using descriptive statistics in terms of mean and standard deviation to answer the research question. While Analyses of Covariant (ANOVA) was used to test all the hypothesis formulated for the study at 0.05 level of significance.

Results

In order to answer the research question the scores of both intervention and control schools on the mean level control, maintenance and promotion of proper defecation were subjected to descriptive statistics and the result is presented in Table 1.

Table 1: Analysis of Means and Standard Deviations Scores for Control, Maintenance and Promotion of Proper of the Intervention and Control School

Types of score	Group	N	Mean	Std. Deviation	Std. Error	Mean difference
Control	Intervention	65	34.40	2.410	.299	
	School					9.77
Maintenance	Control School	57	24.63	2.425	.321	
	Intervention	65	34.38	2.473	.307	10.72
Promotion	Control School	57	23.67	2.668	.353	
	School					10.13
	Control School	57	23.21	1.998	.265	

Table 1 revealed that the mean and standard deviations of students for Control of proper defecation in the intervention school students were 34.40 and 2.410 and that of control school students were 24.63 and 2.425. The mean score difference was 9.77. This indicates that intervention school students scored higher than control school students. The table also revealed that, the means and standard deviations for Maintenance of proper defecation in the intervention school students were 34.38 and 2.473 and that of control school students were 23.67 and 2.668. The mean score difference was 10.72. This indicates that intervention school students scored higher than control school students. Moreover, the table revealed that, the means and standard deviations for Promotion of proper defecation in the intervention school students were 33.34 and 3.073 and that of control school students were 23.21 and 1.998. The mean score difference was 10.13. This indicates that intervention school students scored higher than control school students.

Hypothesis Testing

H₀: there is no significant mean difference in the level of knowledge of control, maintenance and promotion of proper defecation between the intervention school students and the control school students.

In order to test the hypotheses, the scores in the intervention and the control schools for the knowledge of control, maintenance and promotion of proper defecation were subjected to Analyses of Covariant (ANOVA). Summary of the analysis was presented in table 2a, b and c

Table 2a: ANOVA analysis of the Mean Scores for Knowledge of Control of Proper Defecation of the Intervention and Control Schools

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2438.945 ^a	2	1219.472	349.185	.000
Intercept	83.382	1	83.382	23.876	.000
Pretest	16.693	1	16.693	4.780	.031
Group	2430.584	1	2430.584	695.977	.000
Error	415.588	119	3.492		
Total	100699.000	122			
Corrected Total	2854.533	121			

R Squared = .854 (Adjusted R Squared = .852)

Table 2b: ANOVA analysis of the Mean Scores for Knowledge of Maintenance of Proper Defecation of the Intervention and Control Schools

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2512.638 ^a	2	1256.319	458.605	.000
Intercept	1170.915	1	1170.915	427.430	.000
Pretest2	128.885	1	128.885	47.048	.000
Group	2330.062	1	2330.062	850.563	.000
Error	325.993	119	2.739		
Total	111621.000	122			
Corrected Total	2838.631	121			

R Squared = .885 (Adjusted R Squared = .883)

Table 2c: ANOVA analysis of the Mean Scores for Knowledge of Promotion of Proper Defecation of the Intervention and Control Schools

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3579.225 ^a	2	1789.612	391.911	.000
Intercept	54.703	1	54.703	11.980	.001
Pretest3	37.002	1	37.002	8.103	.005
Group	3456.071	1	3456.071	756.853	.000
Error	543.398	119	4.566		
Total	127138.000	122			
Corrected Total	4122.623	121			

R Squared = .868 (Adjusted R Squared = .866)

Table 2a, b and c revealed that the F-value computed was 695.98, Adjusted R Squared of 0.866 for Control, F-value computed was 850.56, Adjusted R Squared of 0.883 for Maintenance and F-value computed was 756.85, Adjusted R Squared of 0.866 for Promotion of proper defecation respectively and the p-values of 0.000 is observed for all of the values. Since the obtained p-value of 0.000 is less than the alpha value of 0.05, this study rejected the null hypothesis that says there is no significant difference in the level of knowledge of control, maintenance and promotion of proper defecation between the intervention school students and the control school students. The decision implies that, there is a significant difference in the level of knowledge of control, maintenance and promotion of proper defecation between the intervention school students and the control

school students. This indicates that the students of intervention school performed significantly better than those in control school in the knowledge of control, maintenance and promotion of proper defecation after the intervention.

Discussion of Findings

The findings of this research revealed that, students in the intervention school had high mean the knowledge of control, maintenance and promotion of proper defecation after the intervention. This implies that the Environmental education intervention enhances the knowledge of control, maintenance and promotion of proper defecation among the students of boarding Secondary Schools in Katsina State. The positive impact of this intervention is in line with the view of Farid (2014) that intervention group students were found to possess higher levels of knowledge after the intervention than the control group. Again the results of this study are in accordance with the research that was conducted by Astuti, Kasmini, and Indriyanti, (2021) on the effectiveness of KATAJAGA Health Education on the Changes of Knowledge, Attitudes, and Behavior of Defecation of Community in Tambakromo Bojonegoro. The results of their study indicated that the knowledge of the community in Tambakromo village has increased after the researcher provided education to them where 81.7% of respondents experienced changes for the better and had better knowledge of defecation. Respondents know and understand the definition of open defecation, the benefits of not open defecation, and the dangers of open defecation. Previous research was used as a reference to compare research results based on the observations and findings of the researchers. The difference between this study and previous research is different in several variables, the previous study used level of public knowledge about KATAJAGA science, while present study used control, maintenance and promotion. In addition, the location of this research was carried out in Katsina State, Nigeria where similar research had never been carried out before.

Conclusion

Based on the findings of this research, it can be concluded that: environmental education intervention enhances the knowledge of control, maintenance and promotion of proper defecation among the students of boarding Secondary Schools in Katsina State

Recommendations

Based on the findings of this study, it was recommended that: Seminars and workshop for Teachers of senior secondary schools on Environmental education to enhance students' knowledge of control, maintenance and promotion of proper defecation and general Hygiene.

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