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EFFECT OF HEALTH EDUCATION INTERVENTION ON KNOWLEDGE, AND ATTITUDE TOWARDS WASTE MANAGEMENT AMONG RESIDENTS OF KANO STATE, NIGERIA

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Abstract

The paper assessed the effect of health education intervention on knowledge, and attitude towards waste management among residents of Kano State, Nigeria. To achieve the purposes identified to guide the paper the knowledge of waste management among residents of Kano State, Nigeria before and after Health Education Intervention and attitude towards waste management among residents of Kano State, Nigeria before and after Health Education Intervention Quasi pre-test, post-test experimental design was used as it compares treatment with no treatment. Participants are assigned to either the experimental, or control group, and are measured or tested both before and after the health education intervention. The population of the study comprised of sixteen million, eight hundred and thirty-three, six hundred and eighty (16,833,680) residents of Kano State. A sample size of sixty (60) was selected as sample size for this study. A descriptive statistic of frequencies and percentages was used to describe the demographic characteristics of the respondents. Mean and standard deviation was used to answer research questions. The hypotheses were tested using inferential statistics; Paired sample t-test was used to test the hypotheses. The findings reveals that the knowledge of waste management among residents of Kano State, Nigeria before and after Health Education Intervention is significant ($t = 6.101$; $p = 0.003$).The attitude towards waste management among residents of Kano State, Nigeria before and after Health Education Intervention is significant ($t = 34641$; $p = 0.001$). The study concluded that, Health education intervention in knowledge of waste management among residents of Kano State Nigeria is effective. Health education intervention in attitude towards waste management among residents of Kano State Nigeria is effective. The study recommended that: Residents of Kano State should actively participate in health education Intervention related to environmental sanitation and waste management. They should adopt positive attitudes and sustainable practices such as waste sorting, recycling, and proper disposal to maintain a cleaner environment. Community members are encouraged to form environmental clubs or sanitation committees to foster collective responsibility for cleanliness and waste control in their neighborhoods. Kano State Government: The government should incorporate health education campaigns into existing waste management and environmental protection policies.

Keywords: *Effects of Health Education, Knowledge, Attitude, Waste Management*

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INTRODUCTION

The term waste is defined as unwanted and unusable material and is also regarded as a substance which is of no use and it is also referred to as rubbish, trash, garbage, or junk depending upon the type of materials. In living organisms, a waste relates to unwanted substance or toxins that are expelled from them for example urine, and feaces (Doron & Assa, 2018). Waste can either be in a form of solid, liquid, gaseous or radioactive substances. Waste that is generated everyday ends up in open dumpsites or scattered along side roads posing an environmental and health hazard, open burning of the waste is common, realizing toxic air pollutants that cause respiratory and cardio-vascular disease

(Adriana & Gragor, 2021). The term waste usually relates to materials produced by human activities and management is generally undertaken to reduce their effect on health, the environment or its aesthetics (Musa, 2021). Waste management refers to the human control of the collection, treatment and disposal of different wastes. It is in other words, the process of collection, transporting, processing, recycling or disposal of waste materials (Dhana & Raju, 2021). Waste management is also carried out to recover resources from it, that is waste could be transformed to wealth. The management of waste involves considering all the classes of waste with different methods and field of expertise (Rinkesh, 2022). Waste management methods vary widely between areas for many reasons, including type of waste materials, nearby land uses and the area (Musa, 2021)

Globally, Waste generation increase 70% of the total health risk of developing countries of which is significant threat and contributes to reparatory infection and land pollution. Additionally waste generated about 201 billion tons in 2016 is expected to become 3.4 billion tons in the next 30 years (Noor, Javid, Hussaini, Bukhari, Ali, Akmal & Hussain, 2020).

Knowledge of waste management refers to systematic process of acquiring, organizing, sharing, and utilizing knowledge to improve waste management practices, to reduce waste, and promote sustainability, also is an important predictor of behaviour as lack of knowledge will lead to a decline in self-efficacy and then lead to the feeling that the individual cannot participate because they lack the knowledge required to take part. Knowledge has been as a key variables affecting environmental action. It has been a quiet that higher levels of environmentally relevant knowledge play a significant role in modifying environmental behaviour (Andrade. C. 2021). Attitude of participants towards waste management play a crucial role in determining the effectiveness of waste disposal and recycling efforts. A positive attitude involves proper segregation of waste, reducing plastic usage, and supporting recycling initiatives Andrade. C. (2021).The attitude is usually determine by the level of Knowledge, Attitude, Knowledge, thought, belief and emotion plays an important role – Attitude was determined as an evaluative response. Negative attitude towards waste management bring about barrier to performing activities concerning waste management, this was evident in the study which was conducted (Tuckers, 2010).

Despite the fact that waste needs properly manage for our good health both poor waste disposal is one of the major environmental and public Health issues of concerned especially in Kano State, and other cities in Nigeria and developing world. Residents of the area of this study has negative knowledge and demonstrate inadequate attitude and improperly dispose of their waste, openly when the residential units were closer to an open waste disposal site as observed. Poor solid wastes pose threat to public health and Environmental quality of which becomes public health problem. Kano State presently is experiencing system which creates a source of pollution, asthma and other respiratory infection that environment, population health and sustainable development.

RESEARCH QUESTIONS

The following research questions were formulated; -

1. What is the knowledge of waste management among residents of Kano State, Nigeria before and after Health Education Intervention

2. What is the attitude towards waste management among residents of Kano State, Nigeria before and after Health Education Intervention

HYPOTHESES

On the basis of the research questions of the study the following hypotheses were formulated:-

1. There is no significant knowledge of waste management among residents of Kano State, Nigeria before and after Health Education Intervention.

2. There is no significant attitude towards waste management among residents of Kano State, Nigeria before and after Health Education Intervention

METHODOLOGY

The research design for this study is quasi-experimental of pre-test and post -test experimental and control groups research design was used. However, unlike a true experiment, a quasi – experiment does not rely on random assignment. The target population of this study consist of sixteen million, eight hundred and thirty three, six hundred and eighty (16,833,680) residents of Kano State, Nigeria according to Nigeria Projected Population census by States, 2024 (National Population Commission, 2024). A sample size of sixty (60) was used for the study. A multi stage sampling procedures involving stratified sampling, simple random sampling, systematic and purposive was used to select respondents. The instrument used for data collection was researcher developed questionnaire. Inferential static of paired t. test was used to test the hypotheses.

RESULTS

Hypothesis I: There is no significant knowledge of waste management among residents of Kano State, Nigeria before and after Health Education Intervention.

This hypothesis was tested with the scores at the pre-test and post-test stages of the experiment. The Paired sample t-test procedure was used for the test because of the need to determine the effect of intervention on the outcome of the experiment. The result of the Paired sample t-test is summarized in the table.

Table 1: Paired sample t-test on significant knowledge of waste management among residents of Kano State

Variable	Test	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Knowledge of Waste Management	Pre-test	30	1.99	0.547	0.0350	6.101	29	0.003
	Post-test	30	3.09	0.524	0.0811			

(t-critical = 1.98, p <0.05)

Results on table 1 revealed that the mean score of 3.09 for knowledge of waste management among residents post-test was significantly higher than 1.99 which is the pretest mean. The t-value for the test (6.101) obtained at 29 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.003 ($p < 0.05$), provided sufficient evidence for rejecting the null hypothesis. The null hypothesis that effect of health education intervention on knowledge of waste management among residents of Kano State, Nigeria is not significant is therefore rejected. This means that result that the residents have significant knowledge of waste management among residents after intervention.

Hypothesis II: There is no significant attitude towards waste management among residents of Kano State, Nigeria before and after Health Education Intervention.

This hypothesis was tested with the scores at the pre-test and post-test stages of the experiment. The Paired sample t-test procedure was used for the test because of the need to determine the effect of intervention on the outcome of the experiment. The result of the Paired sample t-test is summarized in the table

Table 2: Paired sample t-test on attitude towards waste management among residents of Kano State

Variable	Test	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value

Variable	Test	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Attitude towards Waste Management	Pre-test	30	2.25	0.491	0.032	4.641	29	0.001
	Post-test	30	3.18	0.514	0.007			

(t-critical = 1.98, p <0.05)

Table 2 revealed that the mean score of 3.18 for attitude toward waste management among residents of Kano State, post-test was significantly higher than 2.25 which is the pretest mean. The t-value for the test (4.641) obtained at 29 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.001 ($p < 0.05$). were this provided sufficient evidence for rejecting the null hypothesis. The null hypothesis that effect of health education intervention programme on attitude towards waste management among residents of Kano State, Nigeria is not significant is therefore rejected. The result shows that the residents have significant attitude towards waste management among residents of Kano State after intervention.

DISCUSSION OF FINDINGS

The findings from Hypothesis I revealed a statistically significant improvement in the knowledge of waste management among residents of Kano State after the health education intervention. The paired sample t-test showed that the post-test mean score (3.09 ± 0.524) was significantly higher than the pre-test mean score (1.99 ± 0.547), with a t-value of 6.101 and $p = 0.003$ ($p < 0.05$). This indicates that the intervention had a strong positive effect on participants' knowledge. This result is consistent with the findings of Ogunjimi et al. (2018), who reported that structured health education significantly improves environmental health knowledge among community members in Nigeria. Similarly, Afolabi and Aluko (2020) found that targeted health education interventions significantly increased awareness of proper waste disposal methods among urban residents. In the same vein, WHO (2019) emphasized that community-based health education remains one of the most effective strategies for improving environmental sanitation knowledge globally.

Furthermore, Eze and Nwankwo (2017) observed that individuals exposed to continuous health education are more likely to demonstrate improved understanding of waste segregation and disposal practices. In addition, Adekunle et al. (2021) confirmed that post-intervention knowledge scores are consistently higher than pre-intervention scores in community-based environmental health studies, supporting the present findings. Therefore, the rejection of the null hypothesis is justified, indicating that health education intervention significantly enhances knowledge of waste management among residents.

Hypothesis II showed a statistically significant improvement in attitudes toward waste management among residents following the intervention. The post-test mean score (3.18 ± 0.514) was significantly higher than the pre-test mean score (2.25 ± 0.491), with a t-value of 4.641 and $p = 0.001$ ($p < 0.05$). This suggests that the intervention not only improved knowledge but also positively influenced participants' attitudes toward waste management practices. This finding aligns with Ajzen (1991) in the Theory of Planned Behavior, which explains that increased knowledge often leads to a change in attitudes and subsequently behaviour.

Supporting this result, Okpala and Eze (2019) reported that environmental health education significantly improved residents' attitudes toward proper waste disposal in southeastern Nigeria. Likewise, Babatunde et al. (2020) found that participants exposed to structured health education programs developed more favourable attitudes toward recycling and sanitation practices. Furthermore, UNICEF (2018) emphasized that attitude change is a critical outcome of health education interventions, particularly in community sanitation programs.

In addition, Mohammed and Ibrahim (2022) observed that sustained environmental health education leads to long-term positive attitudinal changes toward hygiene and waste management behaviours. These studies collectively support the current finding that health education intervention significantly improves attitudes toward waste management. Thus, the rejection of the null hypothesis is appropriate, confirming that the intervention had a meaningful effect on residents' attitudes.

CONCLUSION

From the findings of the study the following conclusion was made as follows:

1. Health education intervention in knowledge of waste management among residents of Kano State Nigeria is effective.
2. Health education intervention in attitude towards waste management among residents of Kano State Nigeria is effective

RECOMMENDATION

Based on the findings of the study the following recommendations are made:

1. Residents of Kano State: Residents should actively participate in health education programmes related to environmental sanitation and waste management. They should adopt positive attitudes and sustainable practices such as waste sorting, recycling, and proper disposal to maintain a cleaner environment. Community members are encouraged to form environmental clubs or sanitation committees to foster collective responsibility for cleanliness and waste control in their neighborhoods.

2. Kano State Government: The government should incorporate health education campaigns into existing waste management and environmental protection policies. There should be regular training and awareness programmes on waste management practices at the local government areas and ward levels. The government should invest in modern waste management infrastructure**,** including provision of waste bins, recycling centers, and door-to-door waste collection services.

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