

**ENVIRONMENTAL EDUCATION MODELS AND SEWAGE DISPOSAL
ATTITUDES AMONG RESIDENTS IN SOUTH-SOUTH ZONE OF CROSS
RIVER STATE, NIGERIA**

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Abstract

This study examined how environmental education models influence sewage disposal attitude among the residents of South-south Zone in Cross River State. The purpose was to determine how seminar/workshop and enlightenment campaign can influence attitude towards sewage disposal management. Two null hypotheses were formulated to guide the study. Survey research design was employed for the study to objectively describe the phenomenon. Stratified random sampling technique was adopted in selecting 4 out of 7 local government areas. 10% of proportional sampling was used to select 38 sampled communities with total sampled respondents of 387 while accidental sampling was employed during investigation. A questionnaire titled Environmental Education Models and Sewage Disposal Attitude Among Residents Questionnaire (CEEMSDAARQ) that contained 18 items structured with four-point rating scale was the instrument used for data collection. Cronbach alpha method was used to obtain reliability result of 0.73 and 0.79 after pilot test. Simple linear regression analysis was adopted as statistical tools to test the null hypotheses. The results of the analyses revealed that there is a significant moderate influence of seminar/workshop and enlightenment campaigns on sewage disposal attitude among the residents in South-south Zone of Cross River State. Based on the findings, it was recommended among others that enlightenment campaigns should be carried out at regular intervals in order to mobilize people towards developing positive attitude towards sewage disposal and management.

Keywords: Seminars/workshop, enlightenment campaign, attitude and sewage disposal

Introduction

Cross River State capital, has often times been termed the cleanest state capital in the nation. On a normal day, women are seen sweeping the streets, pick refuse from the sites, trucks packing waste, cleaning the drainages and so on. It is unfortunate that in the recent times, the challenges of sewage disposal indiscriminately and clean up drainage is still alarming due to poor attitudes of residents, "I do not care" attitude of sanitation workers and environmental monitoring towards sewage management. Today, one of the silent and greatest environmental issues in our society is negative attitude of people towards sewage disposal. Attitude could be beliefs or feelings related to a person to act towards something, event and the resulting behaviour.

Attitude does not decide conduct specifically, but rather impact conducts expectations and shapes our activities within the environment especially towards environmental issues like sewage disposal management (Ibegere, 2013). People may

increase the rate of indiscriminate sewage disposal because the cost of handling may be significantly too low or because of the negative attitude to open disposal of sewage. Attitude of residents towards sewage disposal can be expected to predict their behaviour since people attitude could be viewed as high cost of behaviour because of the issues related with the behaviour freedom and convenience in the disposal of sewage indiscriminately. Whereas, more positive general attitude and value towards sewage disposal are likely to encourage environmental consciousness which in turn increase greater intentions to engage in household sanitation, proper channelization for sewage disposal, good sucker-away and treatment from the industries before disposing sewage.

Sewage disposal results from a wide range of sources during diverse social or domestic activities, economic and industrial activities that create big amount of liquid which requires a positive attitude for disposal. Sewage is disposed in several ways namely: on-site sanitation system (pit latrines or septic tank) and water born sewer system, gutter or channel, river, open space and so on (Stoveland & Bassey, 2012). This has become standard practice in built-up areas, most cities and industrial complexes. For instance, sewage disposal channelization from former Mr. Big along Eta-agbor Road Calabar adjacent to small gate University of Calabar into the university environment directly toward open pavilion has caused untold odour, stinks and discomfort to learning and relaxation. Other eateries with similar activities of sewage channelization within Calabar Education Zone in the study areas includes Mr. fans, Crunches, Appels, De choice, Bogobri area, Pepperoni, Restaurants and Hotels. This sewage contains toxic chemicals responsible for offensive odour and eyesore in certain streets due to fermentation thus affecting human health.

In affirmation of the above assertion, Mara (2013) emphasized that negative attitude of sewage disposal has their various health implications. Health implications are their smelling odour and unsightliness. These conditions seem greater in rainy periods by virtue of increase in hotness or coldness which increases the amount of bacterial action on clogged sewage within an area. Direct health implication concerns mainly workers who remove sewage from the gutters while for the overall population, the fundamental hazard to wellbeing are backhanded and emerges from reproducing of illness vectors, principally flies and rats. When sewage disposal is clogged with buildup of fats, oil and grease (FOG) leading to blockage of the flow to the drain in the sewer system resulting to diseases like vomiting, diarrhea, typhoid fever, cetric fever and cholera. Also, channelization of sewage through open drainage can breed mosquitoes which transmit pathogens that cause malaria, thereby affecting the health status of people residing in such areas.

Similarly, Abagale, Mensah and Agyemang-Osei (2012) affirmed that in some locations, channels for sewage are not properly constructed, thereby leading to stagnation of sewage. Also, some sucker-away in most cities and homes are being filled causing leakages that lead to health hazard. Most times people believe that even evacuation is the responsibility of government to out lift the sucker-away. Attitude is one of the most fundamental problems associated with sewage disposal and the only stages to enhanced positive attitude is relying on environmental education models such as seminars/workshop and enlightenment campaign for attitude change towards proper disposal of sewage.

Seminars/workshop is seen as group meeting led by an expert who focused on attitude to sewage disposal in a comfortable or an open environment. Typically, they happen through the span of a couple of days and include agreeable discourse, various resource persons including privilege to share and change residents' attitude towards

sewage disposal. Neron (2014) explained that a seminar is by and large a type of scholastic guideline, either at a scholarly establishment or offered by an environmentalist on sewage management system. It has the capacity of uniting little gatherings and concentrating every time on some specific subjects like sewage management in which everybody present is asked to effectively take an interest.

Again, Briggs, Asa and Burke, (2015) maintained that there is a feeling of a course being more of a conventional instructional meeting with the dominance of time spent on introduction of materials concerning an event. While workshop infer moderately additional time spent intelligently, maybe in encouraged exercises where the members create a few forms of information dealing with sewage management or disposal. Splichal, (2016) emphasised that workshops get members completely associated with the learning procedure: little and extensive groups discourses, exercises and activities, chances to work on applying the ideas that are introduced while seminars have a tendency to be more one-route from the moderator without open doors for training or application nor do they effectively connect with members simultaneously. Workshop is more "hands-on" for the participants, who will be engaged in working, thinking, and doing processing, creating up and moving around to observe environmental conditions with a lot of interactions. Seminars include more individuals considering, working, composition, preparing, and possibly some with maybe a couple people sitting close by yet it won't be very as dynamic in distinguishing sewage disposal on the surface of the physical environment

Amadi and Iwuala, (2015) noted that both concoction substances and pathogens are a risk to general wellbeing. Therefore, increasing emphasis on education through seminars or workshops is being put on the necessity to isolate the residential and modern waste stream in other to separate urban waste assets and the strategies for arranging them. Methodologies should be gotten to seclude industrial poisons, pathogens, carbons and supplements if potential social orders are to be supportable as per Stoveland and Bassey (2012), separate between different sanitation choices by the measure of water utilized and this prompts a noteworthy refinement amongst 'dry and wet' sanitation system through seminars and workshops in both rural communities and urban cities for human health and environmental quality.

At the point when man's waste is discarded in pails, pit or vaults, it is alluded to as Night-soil and should be expelled and treated far from the site of accumulation. Gathering can happen day-by-day or as often as possible as on account of basin restrooms or intermittently as on account of a septic tank where a bigger limit exists. In the dry sanitation framework, the level of waste treatment increments with detainment time, yet should in the long run be diverted which can be utilized as a part of agrarian generation.

Importantly, Stoveland and Bassey (2012) noted that conventional sewage brings about the excreta being expelled off-site promptly through a sewage framework, contrasted with dry sanitation system that store the excreta on location. Falomi (2011) stated that shorter recycling loops system is possible than on location or network leave recycling of local sewage. Recent methodologies and novel innovations must be distinguished that are earth strong for waste treatment and reusing must be created and actualized. This can also be achieved through data dispersal by class and workshop association. Many would concur that these arrangements as of now exist and that it is basically important to spread the innovation and for it to pick up believability through exhibit in the created or recently industrialized nations.

Enlightenment campaign is necessary at all level, for people to be aware of their responsibility for nurturing, wise utilization of the environment and taking urgent steps toward restoring environmental balance of proper disposal of sewage to reduce the

menace of pollution. Ajibade (2018) affirmed that campaign is an arranged endeavor to impact popular sentiment, conduct, demeanors and learning in the interest of some reason, individual, intuition or topics, utilizing diverse media over a particular timeframe. Open campaign is generally coordinated towards socially affirmed objectives. In this shrewd, ecological correspondence battle involves the appropriation of particular strides towards a natural goal. The pith is to bring social change and teach an ecological well disposed state of mind or culture in individuals.

Importantly, Nwanmua (2017) examined sewage waste disposal practices, especially in Nigerian urban areas, and the concomitant implication on the environmental sustainability in the country. It argues that the manner in which liquid waste are generated and disposed of in the country poses serious environmental challenges with the enormous health consequences. It is of the view that aggressive public enlightenment campaign aimed at sensitizing the people on sustainable sewage waste management practices is crucial in ridding our environment. To this end, Nwanmua contended that the communication system for promoting best solid/liquid waste disposal practices in Nigeria should incorporate both conventional and traditional media of communication for better result and environmental management sustainability.

Additionally, Nwodu (2017) viewed enlightenment campaign correspondence as the utilization of all types of correspondence in detailing publicizing and advancement of environmental sustainability at all level of society. State of mind can be related as one of the crucial issues with sewage disposal administration. Poor public demeanors of ill-advised sewage transfer and also absence of hesitance of a spotless situation constitute one of the best issues of liquid/sewage administration in Nigeria. Communicate media can impact individuals' mentality (Okoruwa, 2006). Overwhelming reliance and introduction to the media tend to shape residents' convictions, states of mind and observations about sewage squander administration.

A campaign, as Nwabueze (2016) defined it, "is the planning and coordination of series of consistent activities aimed at achieving a central objective". In his study examine the impact of communicate media illumination battles on improper sewage administration for positive attitudinal modification in the south-south geo-political zone of Nigeria. With a specific end goal to choose the association between open cognizance of the impart media and attitudinal change towards sewage disposal administration through illumination battles; overview research and substance investigation were embraced. Three research instruments were utilized to obtain information for the study. They talk with, programs calendar of communicate media and survey. The reactions get from the meetings were utilized as a component of the exchange of discoveries. Two inspecting procedures were received for the investigation, they the purposive and bunch (multi-organize) examining strategies. These procedures empower the specialist to choose the objective respondents from a vast gathering towards sewage management.

Moreso, Nwabueze (2016) noted that environmental campaign is a fundamental piece of ecological administration since it is vital to each human action and in that capacity, would be utilized as a part of organizing people for a 'synergistic' way to deal with sewage administration on nature. Consequently, environmental campaign comprises of all form of interchanges to keep people in general edified and mindful of sewage contamination and patterns. It depends on this reason the part of battle in sewage administration winds up basic. These parts, as featured by Rim Rukeh and Ogbemi (2017) are to bring issues to light on sewage disposal method and also to advance capable natural conduct, particularly for sewage administration. In a similar vein, Ibegere (2013) trusted that a cognizant exertion through environmental campaign is required to incorporate the

interests of both the community leaders and the public in understanding their roles, relationships through their perceptions and attitudes as all are recognized as important stakeholders in attaining a sustainable environmentally oriented effort”.

Nevertheless, Okunna (2011) agreed that efficient enlightenment campaigns are centered on mobilization, which infers persuading individuals to accomplish set objectives. He also advocated for the utilization of conventional or community campaign in natural administration. They trusted that customary community campaign are virile instruments for directing natural administration correspondence of assorted types with the view to persuade the majority, particularly rustic masses, to receive a participatory way to deal with ecological administration. Basically people group battle is one of the indispensable route by which individuals in any given condition could relate particularly in the region of day by day sewage age. The quintessence of condition which manages living irrespectively of all life forms in the earth is just conceivable and realizable using enlightenment campaign in this investigation goes past minor sharing of data, yet as a method for impacting convictions, perspectives, perception and to include behaviour or modification in behaviour.

Purpose of the study

The objective of this study was to investigate how environmental education models influence sewage disposal attitude among residents in South-south Zone of Cross River State, Nigeria.

Specifically, the investigation seeks to:

1. Examine the influence of seminars /workshops on sewage disposal attitude among residents in South-south Zone of Cross River State.
2. Assess how enlightenment campaign influence sewage disposal attitude among residents in South-south Zone of Cross River State.

Research questions

The following questions were formulated to direct the study:

- 1 How do seminars/workshops influence sewage disposal attitude among residents in South-south Zone of Cross River State?
- 2 What is the influence of enlightenment campaign on sewage disposal attitude among residents in South-south Zone of Cross River State?

Statement of Hypotheses

Hypotheses were posed to guide the study:

- 1 Seminars/workshops does not have significant influence on sewage disposal attitude of residents in South-south Zone of Cross River State
- 2 There is no significant influence of enlightenment campaign on sewage disposal attitude of residents in South-south Zone of Cross River State

Methodology

The study area of this research was South-south Zone of Cross River State, Nigeria with seven (7) Local Government Areas namely: Akpabuyo, Akamkpa, Bakassi, Biase, Calabar Municipality, Calabar South and Odukpani. The region has a projected population of 1,590,200 million people according to National Population Commission (NPC, 2017). The study adopted a cross sectional survey design to objectively describe existing phenomenon as at the time investigation. Multi-stag sampling technique was adopted where 4 Local Government Areas were selected out of 7 for the study. 10% of

proportional sampling was used to draw a sample respondents of 389 from 38 communities out of 553 communities in four (4) selected local government areas in South-south Zone of Cross River State. The instrument used for data collection was questionnaire titled: Environmental Education Models and Sewage Disposal Attitude Among Resident's Questionnaire (EEMSDAARQ) design with a four point rating scale. Cronbach alpha reliability method was employed to obtain reliability indices of 0.73 and 79; showing that the instrument was reliable for the study. However, the questionnaire containing 18 items was distributed accidentally to the respondents at the time of investigation. The retrieved questionnaires were scored, coded, analyzed the hypotheses and tested at 05 level of significance using simple linear regression analysis to justify the results at the acceptable criterion.

Presentation of results

Each hypothesis formulated for the study is re-stated in the null form as well as tested, interpreted and presented at 0.05 level of significance.

Hypothesis one

Seminar/workshop does not have significant influence on sewage disposal attitude among residents in South-south Zone of Cross River State. The independent variable in this hypothesis is seminar/workshop while the dependent variable is sewage disposal attitude among residents. Simple linear regression statistical tool was used for data analysis. The result of this analysis is presented in Table 1.

The result of analysis of data presented in Table 1 showed that the predictor or independent variable (seminar/workshop) significantly influences the predicted or dependent variable (sewage disposal attitude among residents) in South-south Zone of Cross River State. The predictor variable accounted for 15.7% of sewage disposal attitude of residents in the study area.

In addition, the result of regression ANOVA presented revealed that there was a significant positive influence of seminar/workshop on sewage disposal attitude of residents $F(1, 385) = 75.677$; $p < 0.05$. This result indicated that there is a moderate positive contribution of seminar/workshop to sewage disposal attitude of residents. This implied that if the use of seminar/workshop continues to increase, the attitude of residents towards sewage disposal will further become more positive. On the other hand, if the use of seminar/workshop decreases further, the attitude of residents towards sewage disposal will become negative in the study area.

Hypothesis two

There is no significant influence of enlightenment campaign on sewage disposal attitude among residents in South-south Zone of Cross River State. The independent variable in this hypothesis is enlightenment campaigns while the dependent variable is sewage disposal attitude among residents. Simple linear regression statistical tool was used for data analysis. The result of this analysis is presented in Table 2.

The result of analysis of data presented in Table 2 indicated that the predictor or independent variable (enlightenment campaigns) significantly influences the predicted or dependent variable (sewage disposal attitude among residents) in South-south Zone of Cross River State. The predictor variable accounted for 13.2% of sewage disposal attitude among residents in the study area.

In addition, the result of regression analysis of variance presented revealed that there was a significant positive influence of enlightenment campaigns on sewage disposal attitude among residents in South-south Zone of Cross River State $F(1, 385) = 61.822$;

$p < .05$. This result indicated that there is a moderate positive contribution of enlightenment campaigns to sewage disposal attitude of residents in the study area. This implied that if the use of enlightenment campaign continues to increase, the attitude of residents towards sewage disposal will further become more positive. On the other hand, if the use of enlightenment campaigns decreases further, the attitude of residents towards sewage disposal will become negative in the study area.

Table 1: Simple linear regression analysis of the influence of seminar/workshop on sewage disposal attitude among residents in South-south Zone of Cross River State (N = 387)

Model	R	R ²	Adj.R ²	Std error of estimate
1	.396	.157	.155	3.18565

Source of variance	SS	Df	MS	F-ratio	p-level
Regression	768.003	1	768.003	75.677	.000
Residual	4130.388	385	10.148		
Total	4898.391	386			

Table 2: Simple linear regression analysis of the influence of enlightenment campaign on sewage disposal attitude among residents in South-south Zone of Cross River State (N = 387)

Model	R	R ²	Adj.R ²	Std error of estimate
1	.363	.132	.130	3.23238

Source of variance	SS	Df	MS	F-ratio	p-level
Regression	645.935	1	645.935	61.822	.000
Residual	4252.457	385	10.448		
Total	4898.391	386			

Discussion of findings

Discussion of findings is based on the formulated hypotheses for the study. Seminar/workshop and sewage disposal attitude among residents

The finding from analysis of the first hypothesis stated that the null hypothesis was rejected. This implied that there was a significant moderate influence of seminar/workshop on sewage disposal attitude among residents in South-south Zone of Cross River State. This could be as a result of the fact that most non-government organizations as well as community-based organizations employ seminar/workshop as a viable tool for disseminating information on various environmental issues. As a result,

those who have benefitted from such initiatives seem to have experienced a change of attitude towards sewage disposal in the study area.

This finding agrees with the finding of Splichal, (2016) which noted that both chemical substances and pathogens are a threat to public health. Therefore, increasing emphasis on awareness through seminars or workshops is being place on the need to separate the domestic and industrial waste stream in order to differentiate urban waste resources and the methods of disposing them. Approaches must be found to isolate industrial toxins, pathogens, carbons and nutrients if future societies are to be sustainable according to Stoveland and Basse (2010), differentiates between various sanitation options by the amount of water used and this leads to a major distinction between 'dry and wet' sanitation system through seminars and workshops in both rural communities and urban cities for human health and environmental quality. The finding of this study is also in consonance with the finding of Falomi (2011) which stated that shorter recycling loops system is possible than on location or community level reuse of residential wastewater. New methodologies and novel advancements must be distinguished that are naturally solid for wastewater treatment and reusing must be produced and executed. This can also be achieved through information dissemination by seminar and workshop organization. Many would concur that these arrangements as of now exist and that it is basically important to spread the innovation and for it to pick up validity through exhibit in the created or recently industrialized nations. While, Neron (2014) explain that a seminar is by and large a type of scholastic guideline, either at a scholarly establishment or offered by an environmentalist on sewage management system. It has the capacity of uniting little gatherings and concentrating every time on some specific subjects like sewage management in which everybody present is asked to effectively take an interest. Enlightenment campaigns and sewage disposal attitude among residents

The finding from analysis of the second hypothesis stated that the null hypothesis was rejected. This implied that there was a significant moderate influence of enlightenment campaigns on sewage disposal attitude among residents in South-south Zone of Cross River State. This could be as a result of the increasing sensitization programmes organized by various stakeholders to build the capacity of people on environmental conservation and management. This has exposed many people to the dangers inherent in certain activities carried out by man in the process of survival.

This finding agrees with the finding of Ajibade (2018) which reported that enlightenment campaign is aimed at informing, educating and sensitizing the public on the impact of environmental pollution, causes of environmental degradation, devastating activities on our environment and its effect on human existence etc, using strategic communication which is faced with the challenges of unraveling and simplifying the complexity of environmental issues in order to ensure sound understanding among the stakeholders, using skills of innovation, creativity, adaptability, imagination and decision making towards environmental sustainability.

The finding of this study is also in concurrence with the finding of Nwodu (2017) which sees enlightenment campaign communication as the utilization of all types of correspondence in detailing publicizing and advancement of environmental sustainability at all level of society. Disposition can be related as one of the key issues with sewage transfer administration. Poor open dispositions of ill-advised sewage transfer and in addition absence of hesitance of a spotless domain constitute one of the best issues of liquid/sewage administration in Nigeria. Communicate media can impact individuals' attitude.

The finding of Okunna (2014) also stated that effective enlightenment campaigns are centered on mobilization, which suggests propelling individuals to accomplish set objectives. He also advocates for the use of customary or community campaign in ecological administration. He trusted that conventional community campaign are virile devices for directing ecological administration correspondence of assorted types with the view to persuade the majority, particularly country masses, to receive a participatory way to deal with natural administration. Basically people group battle is one of the fundamental path by which individuals in any given condition could relate particularly in the territory of every day sewage age. The quintessence of condition which manages living irrespectively of all creatures in nature is just conceivable and realizable through the use of enlightenments campaign as a method for affecting convictions, perspectives, recognitions, and to include behaviour or attitudinal change towards sewage disposal in the study area.

Conclusion

It is observed and concluded that most residents within the study area do not see sewage disposal indiscriminately as a harmful substance to human health. Whereas, this has constituted a serious environmental issue that need urgent attention to continually educate the public on attitude change towards proper disposal and management of sewage within our environment for a healthy living. Hence, the purpose of the study was to determine how environmental education models could contribute to attitude of residents towards sewage disposal in South-south Zone of Cross River State. However, the result of the study revealed that there was a significant influence of seminars/workshop and enlightenment campaigns on sewage disposal attitude among residents in South-south of Cross River State.

Recommendations

The following recommendations were made based on the findings of this study;

- i. Relevant authorities should ensure that seminar/workshop are regularly organized in order to enhance residents knowledge on the dangers of indiscriminate sewage disposal
- ii. Enlightenment campaigns should be carried out at regular intervals in order to mobilize people towards developing positive attitude towards sewage disposal and management.

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