The Nexus between the Abuja Environmental Protection Boards' use of Communication Media and Change in Public Behaviour on Drainage Sanitation

Suleiman Haruna

Department of Theatre and performing Arts, Ahmadu Bello University, Zaria, Nigeria
Email: sulaimanharuna@yahoo.com

Abstract

Poor drainage sanitation is a prevalent problem in many peri-urban communities across Nigeria and this has been blamed for the spread and persistence of perennial diseases like malaria, cholera, guinea worm, and elephantiasis, accounting for high levels of morbidity and mortality and a drawback to national health outcomes. Research has blamed the situation on poor choice of media of communication. Abuja Environmental Protection Board (AEPB) has handled drainage sanitation for over 20 years in the Federal Capital Territory, Nigeria, but, observation and windshield survey revealed that the problem still persists, especially among peripheral, informal settlements. Two study locations with these characteristics were chosen for this study, these are Nyanya and Dakwa. This study appraised the communication media used by the Board, interrogating reasons for its failure to achieve behaviour change. Using the Health Belief Model as theoretical framework, the study establishes that the respondents, who are at different levels of understanding of the dangers of poor drainage sanitation, can be influenced to change their negative practices through the knowledge of barriers and benefits. With a sample population of 1000 obtained via systematic and stratified sampling techniques, this study used quantitative methods to gather relevant data. Thereafter, key findings from the study revealed that 570 respondents, representing 57.8% receive their information regarding drainage sanitation from the AEPB through the radio, 156 others or 15% through television, and 42 others or 4.3% through Information, Education and Communication (IEC) materials. Findings from the study reveal that the Board's concentration on the use of radio to reach citizens rather than deploying a mix of communication methods, played a huge part in awareness creation, but not behaviour change. The study recommends the use of a mix of media methods including participatory communication, and appropriate messaging to facilitate behaviour change regarding drainage sanitation.

Keywords: Behaviour Change; Communication; Communication Strategy; Drainage Sanitation; Wastewater

Introduction

Lack of clean water is a leading causative factor of morbidity and mortality in Nigeria (Olowoporoku 2017, NWRP 2016) and this is accentuated by poor sanitation of the living environment through indiscriminate littering, improper wastewater discharge, and poor sewage disposal (Sadiq, Ezeamaka, Daful, Anjide, Sani & Ogbole, 2018). Wastewater discharged into rivers that people use for drinking, cooking, washing and other functions promote unsanitary living conditions and results in the breeding of communicable diseases ((Sadiq *et al.* 2018). This is increasingly recognized as a major threat to social and economic development, and above all, a major threat to human survival. The impacts of environmental deterioration are more severe on developing countries such as Nigeria. (Sadiq *et al.* 2018).Research has revealed that 2.4 million people lack access to basic sanitation (WHO/UNICEF 2010, WHO 2004). Yearly, more than 2 million people die from diarrheal diseases, of which an estimated 150,000 to 200,000 are children. Ninety percent (90%) of these deaths are blamed on poor hygiene and unsafe water (Sadiq *et al.* 2018), while over 6 million others are stricken with Onchocerciasis (WSSP, 2012).

In Nigeria, the World Malaria Report (2017) has indicated that malaria kills an average of 300,000 people annually, accounting for 25% of the global figures (World Malaria Report, 2017) and through increasing cost of prevention, treatment, hospitalization, and reduced income, malaria is increasing the burden of poverty among families. Other fatalities according to www.unitingtocombatntds.org, are associated with Onchocerciasis (50.57m needing treatment), *lymphatic filariasis* (134.55m needing treatment), Guinea worm (650,000 people affected and an annual loss of 400 million Naira in rice production alone) and cholera (292,000 deaths). All these were principally blamed on the problem of poor drainage of domestic wastewater and storm water as well as poor defecation practices. Owing to this problem, several efforts have been made at the global level to prioritize the issue of clean water and sanitation.

The United Nations (UN) included water and sanitation as goal number 7 of the Millennium Development Goals or MDG (2000 – 2015) and goal number 6 of the Sustainable Development Goals or SDG (2015 - 2030). Danbaba, Nabegu, and Mustapha, (2016) had noted that when sanitation and hygiene were added to the MDGs in 2002, the focus was restricted to the provision of latrines/toilets, rather

than the whole spectrum of sanitation activities. Even then, the target did not receive the required attention and moved "tortoise-like", as observed by Langford, who chided the designers of the target for not understanding that toilets are not the most immediate issue for many 'slum dwellers' (Langford, 2010). This development led to the restriction of the scope of sanitation to the 'management of defecation' (Cairncross & Valdmanis 2003, Fewtrell, Prüss-Üstün, Bos, Gore, & Bartram 2007, WHO/UNICEF, 2000), and government policies and programmes came to be guided as such, affecting the planning and implementation of sanitation programmes.

Sanitation attracted a lot of research to identify the causative factors, postulate opinions, and proffering solutions. However, most of the research centred on the safe management of human excreta in general and open defecation in particular (GLAAS 2012, IYS 2008, Fewtrell *et al*. 2007, Cairncross & Valdmanis, 2003). Several campaigns have indeed been run on open defecation (PHAST, CLTS, SARAR, IBM-WASH, etc.), therefore, safe management of human excreta received more attention than garbage disposal and wastewater removal (IYS, 2008). Programmes and funds earmarked for sanitation excluded blocked drainages and stagnant puddles (PEWASH, 2016). This is even though the provision of improved systems for drainage of wastewater and storm-water runoff does not just serve health purposes, but has been identified as an important component of urban upgrading initiatives (Parkinson, J., Tayler, K. & Mark, O., 2007).

Cairncross and Valdmanis (2003) concurred that poor drainage sanitation, alongside refuse disposal, are seen as part of municipal infrastructure and services, rather than being health-related, and because of this, the two services suffered considerable neglect. This neglect festered, leading to poor public attitude towards the issue; as highlighted by Sadiq *et al.* (2018:178), respondents disposed of their refuse indiscriminately in open spaces and drainages without minding the effect. This took its toll on health outcomes among the citizens.

It is however important to note that national policies on Water Resources, Environment, Health, and Environmental Sanitation have adequately covered sanitation, even though they may not specifically refer to drainage sanitation. These policies provide elaborate instructions on what implementing agencies must do to control the problem. Implementing agencies such as the National

Environmental Standards and Regulations Enforcement Agency (NESREA), state's environmental agencies, roll back malaria programmes, water, sanitation and hygiene (WASH), primary health care units, and urban planning agencies have their establishment Acts and statutes that mirror the provisions of the national policies. Judging from what Ubleble and Kpae (2017) have noted as factors that contribute to poor policy implementation of hygiene programs by different government agencies, it may be safe to say that bad public attitude to sanitation issues, lack of proper public awareness as well as inadequate enforcement may have led to the inertia among both agencies and citizens. Since the three factors are all communication-related, we can assume that communication is key in determining successful policy implementation.

Communication within the context of this study refers to the system (MacBride *et al.* 1981) employed by agencies (governmental or nongovernmental) to transmit information about a development intervention to beneficiary publics to create awareness, secure buy-in, and ultimately gain a paradigm shift. In the case of the problem of sanitation, this has not happened. As Shannon and Weaver (1949) noted, a sender has communicated when their message can limit the receiver's choices and the receiver knows the sender's choices with a reduced amount of uncertainty.

Lisa Howard-Grabman (2007) believes that one of the critical success factors for a development intervention is communication, "through communication we raise awareness, foster commitment, and strengthen community capacity for response". It is not in doubt that communication has led to a paradigm shift in areas like open defecation, polio eradication, breastfeeding, and immunization; the problem of drainage sanitation can therefore benefit immensely from effective communication strategies to turn the tide around. Designing interventions to yield behaviour is best done with an understanding of behaviour change theories and an ability to use them in practice (Glanz, Lewis, & Rimers 2015).

Some scholars (Mefalopulos & Kamlongera 2004, Bessette,2004) held the belief that communities lacked information that can accelerate their development; as such, information must be transferred through communication, to increase knowledge and improve attitudes and practices which would ultimately lead to behaviour change. It is with behaviour change, that the practice of drainage sanitation will improve and the high rates of morbidity and mortality as a result of

poor sanitation will reduce. In Bessette (2004: 6), Nora Quebral defined communication as the interaction that must happen between facilitators and the people "if some common ground is to be reached by which their objective can be achieved".

The question then arises as to whether the agencies mandated to convey this health and environmental information have done the needful and whether they have created the necessary awareness required to encourage behaviour change among the populace. We need to assess the communication strategies they employed to achieve this to identify reasons for their failure.

Over time, it has been the practice of government agencies to deploy the diffusion model to this task, using radio and television jingles, drama, documentaries, interviews with experts, and even newspaper reports (Heggenhougen, Hackethal & Vivek 2003, Bessette, 2004). Many studies have revealed that the diffusion approach is disseminative and does not engage the people; therefore, it is unlikely to lead to behaviour change, let alone sustainable development. Herek (1986) too, has suggested that effort should be made to change negative perceptions and attitudes regarding interventions, recommending the use of multiple methods. Inagaki (2007: 24) also advised that such agencies need to design and implement a communication message or system of information flows that would trigger reactions leading to the adoption of desirable behavioural patterns. Bessette (2004) explains these to include participatory processes, traditional and modern media as well as interpersonal communication.

In a study conducted by Yoder, Zheng, and Zhou, (1991: 38), cited in Morris (2003) on a childhood immunization campaign in Zaire that used print media and radio for their campaign, it was revealed that "no evidence was found that radio spots or programs about immunization influenced people to have their children immunized." Researchers queried the process and argued that people need to be convinced that they can change things and that they refuse to be victims of any situation (Bessette 2004: 18). This can only be achieved through participatory communication, which Freire (1970) observed conscientizes the people and leads to dialogue.

Vilanilam (cited in Nair and White 1993) also observed that disseminating targeted information through media does not itself make people willing

participants in the change process. Once there is no participation, there can be no buy-in from the communities for whom development interventions are targeted, and once there is no buy-in, there can be minimal or no impact. (Nair and White 1993: 83) and that people's behaviour is more likely to change if they are not just passive recipients of messages but are more actively involved in the process: discussion is better than listening (Warnock, Schoemaker, & Wilson 2007).

Bhattacharya believes that self-reliance and self-help are the main factors that can save peasants from a dismal plight (Bhattacharya, 1976: 49 as cited in Haruna 2014), the peasants, therefore, need to understand that they have a problem in the first place. Melkote believes that communication will conscientize them to their needs and problems... and serve as a tool for diagnosis of the problems and serve as an important vehicle in bringing about community participation" (Melkote 1991: 176).

Rogers (Melkote, 2006) defined participation as a "widely participatory process of social change in society, intended to bring about both social and material advancement for the majority of the people through their gaining greater control over their environment". White (1999) argued that the most important outcome of participatory communication for the people is consciousness-raising through critical reflection about their condition which will lead to a significant voice in social action. As Simone St. Anne observed, we enter into collective relationships for two reasons: "to achieve that which cannot be achieved individually and to transcend the limitations of the self through the experience of human interaction" (St. Anne, in Nair & White 1999: 69). She is also convinced that whenever people come together to collaborate, "There is a very real sense in which they have a group Intelligence Quotient (IQ) – the total of the talents and skills of all those involved" (St. Anne, in Nair & White 1999: 70).

Based on this discourse, this study investigated the connection between the prevailing negative drainage sanitation practices and how agencies communicate drainage sanitation to communities, interrogating the design and implementation of their communication strategies. This study focused on two satellite towns of the FCT, which are peri-urban, and have variously been described as informal and unplanned, and, as slums (Uwejamomere, 2008). These are Dakwa and Nyanya. They are located in Bwari and Abuja Municipal Area Council respectively, at distances between 15 to 20 kilometers from Abuja, and were chosen for this

research due to the prevalence of poor drainage sanitation in those two communities.

Theoretical Literature Review

The subjects of this research are people who live with wastewater drainages in their homes and periphery and do not keep them clean, thereby making the drainages breeding grounds for mosquitoes, flies, and harmful pathogens. These in turn spread diseases that affect them all year round. Kurt Lewin has stated that perceptions of reality, rather than objective reality, influence behaviour. "It is not the actual world, but the person's perceptions of it that influence their behaviour" (Rummel, 1975). It could be that these citizens believe that the drainages do not harbour any dangers and have no serious consequences, as such, cleaning them may be a waste of time and resources. The Health Belief Model (HBM) developed by Hochbaum (1958) and Rosenstock (1974) is a good fit for addressing problem behaviours that induce health concerns like the problem of poor drainage sanitation. Together, the six constructs of the HBM provide a useful framework for designing both short-term and long-term behaviour change strategies.

The six constructs are *Perceived Susceptibility,* which refers to one's opinion of susceptibility to a condition; *Perceived Severity,* understanding of the seriousness of a condition and its consequences; *Perceived Benefits,* one's belief in the benefit of reducing the negative behaviour;

Perceived Barriers, the perceived costs of changing the behaviour; Cues to Action coming up with strategies to activate the readiness of citizens, and Self-Efficacy which refers to the acquired confidence in one's ability to take action.

In terms of drainage sanitation, strategies must draw attention to people's susceptibility to frequent bouts of malaria, the intensity and frequency of the sickness, and the benefits of curbing this problem. Barriers to drainage sanitation, including cost of refuse evacuation and drainage construction, may be a hindrance to people with low incomes and the system may provide more encouragement, create demand or approve subsidies, until self-efficacy is achieved.

This work, therefore, explored how the target population responds to communication activities to establish whether these have impacted their

perceptions and attitudes as they live with poor drainage sanitation; and whether they believe communication can reduce the threat at an acceptable cost.

For people to understand the objective reality that drainage sanitation is beneficial, there must be consciousness-raising and this is in the field of communication. Oso (2002) agrees and posits that common people are intelligent and can be active agents of change, and development efforts should be based on people's capacity to contribute and participate actively in the task of transforming their society. According to him people can face their problems with resources or ideas emanating from within without relying on external help.

The rapid urbanization process of Abuja has its consequences such as overcrowded dwellings, informal settlements, pollution, inadequate household facilities, and carefree attitude of people toward poor environmental conditions which have led to deteriorating environment (Ezeamaka 2015). As noted by Oyadiran and Adesina, 2014:

> Parts of the city and mostly the informal settlements are usually dirty. In most cases, gutters or drainages (open or closed) are clogged or blocked and many compounds are hemmed in by solid waste, posing health threats to residents, especially children who live and play around the area (Oyadiran & Adesina 2014).

The two locations (Dakwa and Nyanya) are clear evidences of this scenario and they suffer from neglect and lack of basic infrastructure, good roads, potable water, good drainage, and waste disposal systems (Abubakar & Doan 2017, Eerd 2008). They are mostly populated by the middle or lower class, many of whom cannot afford the high-cost residence in Abuja and whose socioeconomic characteristics are associated with these kinds of environments. Both settlements are characterized by the problem of poor drainage and the consequent susceptibility to diseases that emanate from the stagnation of water. Despite the rampant cases of diseases like malaria and the efforts of government in the areas of communicating public and environmental health, perceptions and attitudes of residents regarding sanitation remain unchanging. Since communication is aimed at changing perceptions, attitudes, and behaviours, it is the aim of this study to investigate where communication has gone wrong and why drainage sanitation remains poor in these communities.

Research methodology

The study deployed stratified and systematic sampling for the selection of households in the study areas; stratified to capture the more urbanized and the less urbanized parts of the settlements. In Nyanya, direct observation was applied to select Area C and Phase 4 New extension as the more organized parts of the study area, while the rest, areas A, B, D, and F were considered as a slum. For Dakwa, Mai Uke and Anguwan Fulani, were more slum than EFAB and Ebira Quarters which were better planned. This classification does not indicate that any of the locations were free of dirty drains; but there were slight differences. This study also applied systematic sampling to select every second household (k = 2), except in cases of absence or decline, where the next household was administered.

The sample size is defined as the sub-set of the total population to be studied, and it is expected to be a representation of the population (Singh & Masuku 2014). According to 1991 census, Dakwa has a population of 171,672 (2011, at 9% growth rate), while Nyanya has a population of 186,399 using the same principle. The average household population of the FCT is 4.2 and this equals a sample frame of 40,874 for Nyanya, and 44,380 for Dakwa. The applicable sample size for each of the study locations is 380, following the Yamane (1967) formula, and because the sample size does not change much for populations larger than 20,000 (Conroy, 2016). However, to accommodate a margin of error, 30% more instruments were administered, making it 500 units each for the two study areas but adjusted 60/40 for Nyanya/Dakwa respectively, considering the difference in population (600 for Nyanya and 400 for Dakwa).

Likert scale, dichotomous and multiple-choice questions were represented in the questionnaire, which covered profile of respondents, who in this case are the household heads, including their age, marital status, level of education, and characteristics of the households including size, occupation, income, availability, and use of kitchen, toilet, and drainage. The questionnaire also had to do with the frequency of health education about the risks of poor drainage sanitation as received from the AEPB, media used, satisfaction of respondents with the health

education they receive. The questionnaire also reflects whether they believed health education would ensure better sanitation of their drainages and what their media preference would be for receiving information about drainage sanitation as well as their suggestions for solutions.

Data analysis

The study sample covered both study areas in the administration of the questionnaire and was administered in both elite and slum parts of the residential areas. The categories of data collated were analysed and presented using frequency, tables, and percentages for the questionnaire data. The first table provides socio-demographic information on the respondents.

Table 1a: Socio-demographic characteristics of Respondents

S/N	Variable	Characteristics	Frequency	Percentage%
1.	Gender	Male	562	57.0
		Female	424	43.0
		Total	**986**	**100.0**
2.	Age	25 years and below	546	55.4
		26-35 years	52	5.3
		36 - 45 years	270	27.4
		46 – 53 years	98	9.9
		55 years and above	20	2.0
		Total	**986**	**100.0**
3.	Level of education	Primary school	112	11.4
		Secondary school	364	36.9
		Post-secondary school	452	45.8
		None of the above	58	5.9
		Total	**986**	**100.0**
4.	Marital Status	Single	360	36.5
		Married	598	60.6
		Separated/Divorced	12	1.2
		Widowed	16	1.6
		Total	**986**	**100.0**
5.	Number of Persons in the Household	Less than 3	152	15.4
		3-6	542	55.0
		7-10	98	9.9
		11and above	194	19.7
		Total	**986**	**100.0**
6.	Estimated Monthly Income	N 18,000- N25,000	372	37.7
		N 26,001- N35,000	306	31.0
		N 36,001- N45,000	170	17.2
		N 46,001- N55,000	46	4.7
		Above N 55,000	92	9.3
		Total	**986**	**100.0**

Source: Researcher's field survey, 2021

The table shows that 562 (57%) of the respondents were male, while 424 (43%) were female. This level of participation by the women is significant, as they may indicate a change in social trend.

The table also reported that 546 (55.4%) of the respondents were under 25 years of age; 52 (5.3%) were between the ages 26 and 35; 270 (27.4%) were between 36 and 45, 98 (9.9%) were between 46 and 55; while only 20 (2%) were above 55. This indicates that more young people participated in the survey either as heads of households or merely tenants and this corroborates the earlier research conducted by Bako, (2018). Another high category constitutes those in the range of 36 and 45, which covers more heads of families.

The table also provided a distribution of educational attainment among the respondents. 112 (11.4%) held primary school certificates; 364 (36.9%) held secondary school certificates; 452 (45.8%) went beyond secondary education; while 58 (5.9%) did not attend any formal education. The results indicate that over 90% have some level of literacy, with those who studied beyond secondary school as the majority. The instrument intended to establish the minimal literacy relating to sanitation and hygiene awareness, which does not require high education levels.

On marital status, the table revealed that 360 (36.5%) respondents were single; 598 (60.6%) were married; 12 (1.2%) separated/divorced; and 16 (1.6%) are widowed. The table shows that most of the respondents are married and are therefore responsible for the issue of sanitation in their homes. The size of households of the respondents was also highlighted; 152 (15.4%) respondents reveal they have less than 3 members; 542 (55%) indicate that they have 3 - 6 members; 98 (9.9%) have 7 – 10 members; while 194 (19.7%) had 11 members and above. Out of 986 respondents, only 152 reported they had less than 3 members and this included those who were single. This implies that 834 respondents had more than 3 family members, with the highest number of respondents (542) having 3 – 6 members. Even the category of families with 11 members and above are significant at 194.

Table 1b: Socio-demographic characteristics of Respondents

S/N	Variable	Characteristics	Frequency	Percentage%
7.	Duration of living in neighbourhood	Less than 5 years Beyond 5 years **Total**	406 580 **986**	41.2 58.8 **100.0**
8.	Status of Accommodation	Rented Owned **Total**	672 314 **986**	68.2 31.8 **100.0**
9.	Number of Rooms	1-4 rooms More than 4 rooms **Total**	672 314 **986**	68.2 31.8 **100.0**
10.	Length of Stay in the Neighbourhood	Less than 5 years More than 5 years **Total**	406 580 **986**	41.2 58.8 **100.0**

Source: Researcher's field survey, 2021

The table also captured the income levels of the respondents. 372 (37.7%) earn N18,000 - N25,000; 306 (31%) earn N26,000 – N35,000; 170 (17.2%) earn N36,000 - N45,000; 46 (4.7%) earn N46,000 - N55,000; while 92 (9.3%) earn above N55,000. This reveals that most of the respondents are low income earners, as less than 10% earn N55,000 per month.

On the status of accommodation, 672 (68.2%) admit they rented houses, while 314 (31.8%) owned their houses. Information on the number of rooms in their houses reveals that 672 (68.2%) admit there are 1 – 4 rooms in their houses; while 314 (31.8%) admitted that their houses have more than 5 rooms. As for the length of stay in the neighbourhood, 406 (41.2%) said they have been in the neighbourhood for less than five years; while 580 (58.8%) said they have been there for more than five years. Most of the respondents (68.2%) admit to being tenants, while the same number (68.2%) admits to living in houses that have 1 – 4 rooms. Incidentally, the landlords form 31.8% of the respondents and the same number of respondents (31.8%) admitted to living in houses with more than four rooms.

Table 2. Respondents' views on existing communication media of Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT.

S/n	Variable	Characteristic	Frequency	Percentage%
1.	Media environmental message is received	Radio	570	57.8
		TV	156	15.8
		Home visitation	116	11.8
		Newspapers	0	0.0
		Social media	86	8.7
		IEC materials	42	4.3
		Town hall meeting	4	0.4
		Announcement (Town Crier)	4	0.4
		Drama	0	0.0
		Worship centers	8	0.8
		No of the above	0	0.0
		Total	**986**	**100.0**
2.	Nature of environmental message	Environmental cleanliness	580	58.8
		Personal hygiene	214	21.7
		Refuse disposal	142	14.4
		Waste water management	50	5.1
		Total	**986**	**100.0**
3.	Frequency of message	Weekly	304	30.8
		Monthly	236	23.9
		Quarterly	130	13.2
		Yearly	316	32.0
		Total	**986**	**100.0**

Source: Researchers field survey, 2021

Table 2, reveals respondents views on existing communication media of Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT. On the media through which environmental messages are received, 285 (57.8%) claim radio, 78 (15.8%) admit to television, 58 (11.8%) to home visitation, none for newspapers and drama, 43 (8.7%) for social media, 21 (4.3%) for IEC materials, 2 (0.4%) admit to town hall meetings, another 2 (0.4%) to town crier announcements, and 4 (0.8%) for worship centres. On the nature of the

message, 290 (58.8%) admit to receiving messages on environmental cleanliness, 107 (21.7%) on personal hygiene 71 (14.4%) on refuse disposal and 25 (5.1%) on waste water management. On the frequency at which they received these messages, 152 (30.8%) respondents indicate that they receive the messages weekly, 118 (23.9%) monthly, 65 (13.2%) quarterly, and 158 (32%) a year apart.

Table 3: Respondents appraisal of environmental messages through existing communication media by Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT.

S.N		Variables		∑f	∑fx	$\bar{x}$ Mean	Ranking	Remark
		Yes	No					
1.	Messages adequately sensitized on environmental sanitation	422	564	986	1408	1.43	4th	No
2.	Messages effectively sensitized on appropriate water usage and disposal	458	528	986	1444	1.47	2nd	No
3.	Messages sensitized on appropriate disposal of refuse	462	524	986	1448	1.47	2nd	No
4.	Messages sensitized on the importance of environmental protection	484	502	986	1470	1.49	1st	No
5.	Messages effectively sensitized on drainage construction and maintenance	410	576	986	1396	1.42	5th	No
6.	AEPB Communication strategy involved members of the community in their sanitation campaigns in your area	254	732	986	1240	1.26	9th	No
7.	AEPB utilized community events like festivals and ceremonies to propagate	260	732	986	1246	1.26	9th	No

	sanitation							
8.	Members of the community were involved in knowledge sharing on drainage sanitation	346	640	986	1332	1.35	6th	No
9.	There have been communal inspection of drains in your area	308	678	986	1294	1.31	7th	No
10.	There have been any punitive action on those who do not maintain their drainages	242	744	986	1228	1.25	6th	No
11.	AEPB conducted inspection and enforcement exercises alongside the community	280	706	986	1266	1.28	11th	No
12.	Other members of the community received training on drainage sanitation	206	780	986	1184	1.22	12th	No

Source: Researchers field survey, 2021

Table 3, reveals respondents' appraisal of environmental messages through existing communication media by Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT. 422 respondents agreed that messages adequately sensitized them on environmental sanitation, while 564 did not agree. 458 respondents agreed that the messages they received effectively sensitized them on appropriate water usage and disposal, while 528 did not agree. 462 agreed that the messages they received sensitized them on appropriate disposal of refuse, while 524 did not agree. 484 agreed that the messages sensitized them on the importance of environmental protection, while 502 disagreed. 410 agreed that the messages effectively sensitized them on drainage construction and maintenance, while 576 did not. 254 agreed that AEPB Communication strategy involved members of the community in sanitation campaigns, while 732 disagreed. 260 agreed that AEPB utilized community events like festivals and

ceremonies to propagate sanitation, while 732 disagreed. 346 agreed that members of the community were involved in knowledge sharing on drainage sanitation, while 640 disagreed.

A total of 308 respondents agreed that there has been communal inspection of drains in their area, while 678 disagreed. Another 242 agreed that there have been any punitive action on those who do not maintain their drainages, while 744 did not. Furthermore, 280 agreed that the AEPB conducted inspection and enforcement exercises alongside the community, while 706 did not. For 206 respondents, other members of the community received training on drainage sanitation, while 780 did not. The overall remark is that the respondents disagreed with the issues raised.

Table 4, reveals respondents' views on the nature of awareness campaigns and messages conveyed by AEPB's Communication media. Seven hundred and thirty six (736) respondents strongly agreed that poor drainage sanitation practices could have health implications. 198 agreed, none were undecided, 16 disagreed, while 36 strongly disagreed. The overall remark is that the respondents are agreed. 716 mosquitoes could breed from poor drainage sanitation. 228 agreed, 7 were undecided, 816 disagreed, and 20 strongly disagreed. The overall remark is that the respondents are agreed. 630 strongly agreed that poor drainage sanitation could be caused by improper disposal of refuse. 222 were agreed, 6 were undecided, 20 disagreed and 8 strongly disagreed. The overall remark is that the respondents are agreed. 630 strongly agree that poor drainage sanitation could be caused by improper disposal of wastewater, 304 agreed, 4 were undecided, 36 disagreed and 12 strongly disagreed. The overall remark is that the respondents are agreed. 748 strongly agreed that poor drainage sanitation could pollute the environment, 212 agreed, none were undecided, 22 disagreed, and none disagreed. The overall remark is that the respondents are agreed. 558 strongly agreed that it is their responsibility to maintain clean drainages. 284 also agreed, 16 were undecided, 78 disagreed and 50 strongly disagreed. The overall remark is that the respondents are agreed.

Table 4: Respondents views on Nature of awareness campaigns and messages conveyed by AEPBs Communication media

S/n	Statement	Degree of Agreement					∑f	∑fx	Mean	Overall Remark	Ranking
		Strongly agree	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**					
1.	Poor drainage sanitation practices could have health implications	736	198	0	16	36	986	4540	4.61	Strongly agreed	4th
2.	Mosquitoes could breed from poor drainage sanitation	716	228	6	16	20	986	4561	4.63	Strongly agreed	3rd
3.	Poor drainage sanitation could be caused by improper disposal of refuse	730	222	6	20	8	986	4604	4.67	Strongly agreed	2nd
4.	Poor drainage sanitation could be caused by improper disposal of wastewater	630	304	4	36	12	986	4462	4.53	Strongly agreed	5th
5.	Poor drainage sanitation could pollute the environment	748	212	0	22	4	986	4636	4.70	Strongly agreed	1st
6.	It is your responsibility to maintain clean drainages	558	284	16	78	50	986	4180	4.24	Agreed	6th
	Aggregate Mean								**4.56**	Strongly agreed	

Source: Researcher's field survey, 2021

Discussion of findings

Respondents expressed their views on existing communication media used by the Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT (see table 1, above). The most popular media through which they claim to receive messages was radio, at 57.8%, out of 10 channels, with Television, recording 15.8%. 58.8% claim that the media messages they received were on environmental sanitation, and only 5.1% recall receiving any messages on drainage of wastewater. 32% of the respondents reported that they receive these messages once a year; this is a subtle way of admitting that the messages never came. The remaining responses are spread too thin to specify whether the messages came regularly or not.

The study then appraised the impact of the communication media by Abuja Environmental Protection Board (AEPB); in terms of influence, inclusion, community action and enforcement; the respondents said no in all cases (Table 2). Respondents indicated that they were not adequately sensitized by media messages on environmental sanitation (564/986), appropriate water usage and disposal (528/986), appropriate disposal of refuse (524/986), the importance of environmental protection (502/986), and drainage construction and maintenance (576/986). Members of the community were not involved by the AEPB in designing or executing sanitation campaigns (732/986), did not utilize community events like festivals and ceremonies to propagate sanitation (732/986) or involve members of the community in knowledge sharing on drainage sanitation (640/986). There has also not been communal inspection of drains in their area (678/986), and no punitive actions on those who do not maintain their drainages (744/986). AEPB have not conducted inspection and enforcement exercises alongside the community (706/986), and there was never a training session on drainage sanitation at the community (780/986).

This data showed radio as the media of choice by AEPB, and the regularity of its messaging was more on environmental cleanliness and not specifically on drainage sanitation. The study also provides evidence that communicating drainage sanitation was not a priority. The data indicate that restricting communication activities to radio through jingles and media appearances by

management was not an effective way of communicating drainage sanitation for behaviour change.

The survey proved that the highest category of respondents admitted a high level of awareness among respondents on issues related to poor drainage sanitation (see table 3). This category also agreed that poor drainage sanitation practices have health implications (736/986), that mosquitoes breed from poor drainage sanitation (716/986), that poor drainage sanitation is caused by improper disposal of refuse (730/986), that poor drainage sanitation is caused by improper disposal of wastewater (630/986), that poor drainage sanitation pollutes the environment (748/986) and that they (respondents) are responsible for maintaining clean drainages (558/986). The high level of awareness, however, did not influence positive behaviour change of respondents, indicating the need for the use of a mix of media. Less than 30% of respondents agreed they or their communities were involved in the campaign, they were mere receivers of radio and TV messages.

Conclusion and Recommendation

The study notes that agencies of government like the Abuja Environmental Protection Board must realise the need to conscientize the people and appeal to their sensibilities beyond just awareness creation. As the study has revealed, awareness in itself is not enough to engender behaviour change. Deliberate strategies are required to change negative practices and behaviour of citizens, especially practices like poor drainage sanitation that promote negative health outcomes. These communication strategies must apply a mix of communication methods, must be participatory, dialogic, and horizontal in application and not just disseminative and vertical.

The study established that the media employed by the AEPB has not impacted on their drainage sanitation practices over the period of 20 years since inception; most respondents say they receive messages through the radio but also admitted that the messages were too few and far between and not targeted specifically at drainage sanitation. There is therefore the need for the media engagement to be more targeted, wider, more frequent, and consistent to strengthen its ability to elicit positive behaviour change. The study also calls attention to the vast empirical literature that recommended people's engagement and participation in implementing behaviour change communication campaigns. The respondents in

the study have suggested the use of theatre, town announcers (town criers) and worship centres as additional communication channels.

References

Abubakar I. R. & Doan P. L. (2017). Building new capital cities in Africa: Lessons for new satellite towns in developing countries, *Journal of African Studies, DOI: 10.1080/00020184.2017.1376850*

Bessette G. (2004). *Involving the community: A guide to participatory development Communication*. Penang, Malaysia, Southbound and International Development Research Centre

Cartwright, D., ed., (1951), *Field Theory in Social Science: Selected theoretical papers* by Kurt Lewin. New York. Harper & Brothers Publishers. accessed at https://scholar.google.com/scholar?cluster=4764350132135418232&hl=en&as_sdt=0,5

Cairncross S., and Valdmanis V. (2003). *Water Supply, Sanitation, and Hygiene Promotion*. Disease Control Priorities in Developing Countries, 2nd edition.

Conroy, R. (2016). *The RCSI Sample size handbook: A rough guide.* https://www.researchgate.net/profile/Ronan-Conroy/post/How-to-determine-sample-size2/ accessed on 03/09/21, 06:24

Danbaba G, Nabegu A. B, Mustapha, B. A. (2016). Assessment of Implementation of the Environmental Sanitation Policy in the Federal Capital Territory (FCT) Abuja, Nigeria. *Global Journal of Social Sciences Studies Vol. 2, No. 1, 1-13, 2016*

Eerd, van M. (2008). *Access to housing, land, and basic services in Abuja, Nigeria.* Rotterdam, Netherlands. Cordaid/Institute for Housing and Urban Development Studies

Elephantiasis (Lymphatic filariasis). Uniting to combat neglected tropical diseases https://unitingtocombatntds.org/ntds/lymphatic-filariasis/accessed on 22nd August 2021. 10.55a.m

Ezeamaka C. K. (2015). *Land administration in Abuja, The federal capital City of Nigeria from 1999 to 2010.* (Unpublished M. Sc Dissertation), Department of Geography, Nigerian Defense Academy, Kaduna, Nigeria.

Federal Ministry of Water Resources, Nigeria. (2016). *National Water Resources Policy*. Abuja. Federal Government Press

Federal Ministry of Water Resources., Nigeria (2016). *Partnership for Expanded Water, Sanitation and Hygiene (PEWASH)* Abuja. Federal Government Press

Fewtrell L., Prüss-Üstün A, Bos R, Gore F, Bartram J, (2007). *Water, sanitation, and hygiene: Quantifying the health impact at national and local levels in countries with an incomplete water supply and sanitation coverage.* Geneva. WHO Environmental Burden of Disease Series No. 15

Freire, P., (2005) *Pedagogy of the Oppressed* (30th Anniversary edition; Myra Bergman Ramos,.Trans.) New York, NY. Continuum.

Glanz, Rimer, and Lewis' "Health Behavior and Health Education: Theory, Research, and Practice. Guide to Community Preventive Services, CDC". www.thecommunityguide.org. National Cancer Institute, US Department of Health, 2005. *Theory at a Glance: A guide for Health Promotion Practice.* Second Edition

Haruna S. (2014). *From Diffusion to Community Participation: The Communication Strategies of the National Malaria Control Programme (NMCP)* MA/ARTS/2965/2009-2010, (Unpublished M.A. Thesis), Department of Theatre and Performing Arts, Ahmadu Bello University, Zaria, Nigeria

Heggenhougen H. K,. Hackethal V. and Vivek P., (2003). *The behavioural and social aspects of malaria and its control: An introduction and annotated bibliography*, UNDP/World Bank/WHO/TDR, p. 3

Herek, G. (1986). The instrumentality of attitudes: Toward a neo-functional theory. *Journal of Social Issues, 42:2, pp.99–114.*

Howard-Grabman, L., (2007). Demystifying community mobilization: an effective strategy to improve maternal and new born health. Washington. USAID (Access program),

Inagaki, N. (2007). *Communicating the impact of communication for development: recent trends in empirical research*, Washington DC, World Bank, (p. 24)

Joint Monitoring Programme for Water Supply and Sanitation (2000). *Global Water Supply and Sanitation Assessment Report*. New York, NY.

Joint Monitoring Programme for Water Supply and Sanitation (2010). *Global Water Supply and Sanitation Assessment Report*. New York, NY.

Jones, C.L., Jensen, J. D., Scherr, C.L., Brown, N.R., Christy, K., Weaver J. (2015). The Health Belief Model as an Explanatory Framework in Communication Research: Exploring Parallel, Serial, and Moderated Mediation. *Health Communication, 30(6): 566–576. US Department of Health and Human Services.*

Langford M., (2010). A Poverty of Rights: Six Ways to Fix the MDGs. *IDS Bulletin Volume 41 Number 1. Oxford. Institute of Development Studies, Blackwell Publishing Ltd.*

MacBride Commission (1980/2004). Many voices, one world: Towards a new, more just, and more efficient world information and communication order. Report of the International Commission for the Study of Communication Problems. UNESCO Rowman & Littlefield.

Mefalopulos, P., and C. Kamlongera (2005). *Participatory Communication Strategy Design, A Handbook: A Training and Reference Guide for Designing and Implementing Communication for Development Strategies for Field Projects.* 2nd ed. Harare, Zimbabwe. SADC/FAO.

Melkote, S. R. (1991). *Development Communication in the Third World: Theory and Practice.*
New Delhi, India: Sage Publications.

Melkote, S. R. (2006). *Everett Rogers and his contributions to the field of communication and social change in developing countries.* Journal of creative communication. 1:1. New Delhi. Sage

Morris, Nancy, (2003). *A Comparative Analysis of the Diffusion and Participatory Models in Development Communication*, Communication Theory. 13(2), (pp. 225-248), Oxford University Press.

Nair, K.S. and White, S. A. (eds.) (1993). *Perspectives on development communication*. Delhi. Sage Publications.

National Population Commission of Nigeria. (1991). *Nigeria Population and Housing Census 1991.* Lagos. National Population Commission,

Olowoporoku, O. A., (2017). *A Recipe for Disaster: An Assessment of Environmental Sanitation Situation in Nigeria* MAYFEB Journal of Environmental Science Vol 1 (2017) - Pages 1-5

Oso, L. (2002). "Communication theories and development communication". In Oso, L. (ed.), *Communication and development: A reader.* Abeokuta: Jedidah Publishers. (pp. 151-168)

Oyadiran, P; Adesina, I. F., (2014). An Assessment of Abuja Environmental Protection Board (AEPB) In Implementing Environmental Sanitation Policy in the Federal Capital Territory, Abuja. *Conflict Resolution & Negotiation Journal*. Issue 2, (p33-88).

Parkinson, J., (2003). Drainage and stormwater management strategies for low-income urban communities. *Environment & Urbanization.* Vol 15 No 2 October (116)

Parkinson, J., Tayler, K. & Mark, O., (2007). Planning and design of urban drainage systems in informal settlements in developing countries. *Urban Water Journal.* Vol. 4, No. 3. (pp. 137 – 149)

Prochaska, J. O. & Di Clemente, C. C., (1982). *Transtheoretical therapy: Toward a more integrative model of change.* Psychotherapy: Theory, Research and Practice, 19(3), 276-288.

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992*). In search of how people change. Applications to addictive behaviors*. American Psychologist, 47, (pp. 1102–1114)

Report of the World Summit on Sustainable Development (2002). Johannesburg. United Nations

Rummel, R. J. (1975). *Understanding conflict, violence and war:* Vol. 1: the dynamic psychological field. Chapter 3 page 3, Beverly Hills, CA: Sage.

Sadiq Q. O., Ezeamaka C. K., Daful M. G., Anjide T. W., Sani H. & Ogbole M., (2018). Environmental sanitation practices in Kuchigworo and Garamajiji along airport road, Abuja. *Journal of Geography and Regional Planning. Vol. 11(11), (pp. 172-182)*

Shannon, C.E. & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL. University of Illinois Press.

Singh, AS, Masuku M. (2014). Sampling Techniques and Determination of Sample Size in Applied Statistics Research: An Overview. *International Journal of Commerce and Management*. 2(11):1-22.

Ubleble B. A. & Kpae G. (2017). A Critique on Nigeria National Policy on Environment: Reasons for Policy Review. *IIARD International Journal of Geography and Environmental Management.* ISSN 2504-8821 Vol. 3 No.3

United Nations General Assembly (2008) *International Year of Sanitation 2008*: *Advocacy for sanitation; a brief guide.* New York. UN Water.

Warnock, K., Schoemaker, E., Wilson M., (2007). *The case for communication in sustainable development*: *Promoting dialogue, debate and change.* London. Panos.

White, S.A. (1999). "Participation: Walk the talk." In S.A. White (ed.) *The art of facilitating participation* (pp. 15-32). New Delhi. Sage.

World Health Organization (2004). *The sanitation challenge: Turning commitment into reality*. Geneva.

World Health Organization (2017). *World Malaria Report, 2017*, Geneva.

World Health Organization (2012). *Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)*. Geneva.

Yamane, T (1967). *Elementary sampling theory*. Instituto del Libro, Edis. Revolucionaria