

Environmental Agencies and The Readiness to Combat Environmental Hazards Through Health Campaigns: A Focus On Plastic Pollution

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Abstract

This study investigated environmental agencies and the readiness to combat environmental hazards through health campaigns; with focus on plastic pollution. The study came against the backdrop of increase in the indiscriminate disposal of plastic by users; hence, how the concerned agencies have been able to combat the health and environmental hazards that come with it became a necessary study. The study was designed as survey and was situated within the context of Knowledge Attitude and Practices model and the Agenda Setting Theory. The population of the study was Anambra residents; while a sample size of 400 was used. From the quantitative data gathered and analyzed, it was found that , Anambra residents know so much about the problems of plastic pollution; Anambra residents are not aware of effort by the concerned agencies in fighting plastic pollution; it was thus recommended that there was the need to incorporate environmental pollution, especially, plastic pollution education into the school system, starting from the primary to tertiary level; in this way, Nigerians would become exposed to the issues of the hazards of plastic pollution from their early years. This could bring about a positive attitude in regard to mitigation pf plastic pollution. The study further recommended that the government should make laws towards regulating indiscriminate disposal of plastic waste.

Key words: Plastic pollution, environmental pollution, plastic waste, environmental agencies

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1. INTRODUCTION

The growing trend of indiscriminate disposal of plastic has become a nightmare to environmentalists and sanitation agencies in Nigeria (World Health Organization, 2018). Plastics litter all nooks and crannies of major cities and towns. The most common are plastic drinking bottles, plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws and stirrers, foam take-away containers etc.

Doherty (2018) estimated that 60 percent of the estimated 8.3 billion tones of plastic produced worldwide end up in the environment with about 8 million tones of plastic eventually finding their ways into earths' water bodies. National Environmental Standards and Regulation Enforcement Agency (2018) also advocated for “ single use of plastic, by this, they mean that if someone goes to the supermarket to buy some things, they should put them in a plastic bag and should not throw away the plastic bag but use them another day.

Most plastic materials do not biodegrade. Instead, they slowly break down into smaller fragments known as micro plastics. Worryingly, little is known about the impact of micro plastics on human health. Plastic bags and containers made of polystyrene foam could take up to thousands of years to decompose, contaminating soil and water (Walter, 2016). The health and environmental damage caused by plastic waste is vast. The total economic damage to the world's marine ecosystem amounts to at least \$13 billion yearly (Friends of the Environment Report, 2017).

Governments are taking some drastic measures to sanitize the environment. For instance, in Ireland customers are forced to pay for plastic bags. Money raised from the levies is paid to a fund devoted to combating plastic pollution and other environmental challenges. The governments of Rwanda and Kenya have banned the manufacture, use, sale and importation of all plastic bags (De Freytas-Tamura, 2017).

In Nigeria, the Federal Ministry of Environment through its enforcement arm – the National Environmental Standards and Regulations Enforcement Agency (NESREA), has adopted EPR model due to the economic, health and environmental implications. This is in line with the National Policy on Environment (1999) (Section 4.12 and 4.19) which stipulates that sustainable industrial development can be achieved through policy initiatives that seek, among others, to ensure production processes incorporate realistic programmes for waste minimization through material recovery and recycling.

Senior officials of NESREA said: “The EPR programme is a statutory provision in the various National Environmental Regulations in the “brown environment” sector, including the Food, and Beverage sector and the Electrical Electronic sector (Okogba, 2018).

The Regulations were developed pursuant to sections 25 (1) of the NESREA Act, 200” to make regulations for the purpose of protecting public health, promotion of sound environmental sanitation, and protection of the environment.

Operational Guidelines for the EPR had been developed and published, delineating responsibilities for the key sector players – the producers, consumers, collectors, recyclers, the Producer Responsibility Organizations (PROs) and the government.

Furthermore, NESREA has established the Alliance on Sustainable Consumption and Production (ASCP), which promotes green and circular economy. The membership of the alliance includes relevant government agencies whose primary mandate has strong bearing on sustainable consumption and production patterns. To kick start the move, NESREA aligned with the Food and Beverages Recycling Alliance (FBRA) and other manufacturers to fight the plastic menace. Pioneer members of the alliance are Coca-Cola Nigeria Ltd, Nigerian Bottling Company Ltd (NBC), Nigerian Breweries PLC, Seven-Up Bottling Company Limited and Nestle Nigeria Limited (Guardian Online, 2018).



Figure 1. A Plastic Dump Site in Fegge Onitsha, Anambra State, Nigeria

The News Agency of Nigeria (2018) reports that Federal ministry of Environment has cautioned Nigerians to take proactive measures towards reducing the problem that comes with plastic pollution. It was further reported that government is looking for a means to ban plastic bag when alternatives become available.

2. STATEMENT OF THE RESEARCH PROBLEM

Plastic pollution has in recent times become a threat to the social structures and health of people in the society with indiscriminate disposal of plastic by people living in the society having no end in sight. According to the State of Plastic Report (2018) only nine per cent of the nine billion tones of plastic in the world ever produced have been recycled. Most end up in landfills, dumps or in the environment.

It is predicted that if the current consumption patterns and waste management practices continue, by 2050, there would be around 12 billion tonnes of plastic litter in landfills and the environment.

With the production outpacing almost every other material population, plastic waste is now one of the biggest environmental scourges of the time. The scale of the challenge is daunting.

In Nigeria, the problem of plastic pollution and the hazards that come with it is more on the increase compared to other countries of the world. Uwaegbulam, Nwannekamma and Gbonegun (2018) note that “like in advanced countries, Nigerians have been caught up with a throwaway culture that treats plastic as a disposable material rather than a valuable resource to be harnessed. No day passes without commuters throwing plastic bottles on the streets. The indiscipline has reached a feverish level. Everywhere you go; empty plastics litter the environment.

This situation no doubt calls for urgent attention and campaign from the government and concerned agencies to find means to end the issue of environmental plastic pollution. Nwabueze (2010) asserts that communication is an integral part of environment management because it is central to every human activity and as such, would be used in coordinating the resources for a more synergistic approach to management of the environment. Therefore, environmental communication and media discusses is pertinent in the concerned agencies effort to combat the environmental and health hazards which comes with indiscriminate disposal of plastic pollution.

Against this backdrop, we ask: are there measures being taken by the concerned agencies in Nigeria to campaign against the problem of environmental plastic pollution? Are there discourses/campaigns in media to combat this menace of 21st century Nigeria?

3. OBJECTIVE OF THE STUDY

In the light of the research problem, this study examined the readiness of environmental agencies to combat the environmental hazard of plastic pollution through health campaigns using Anambra State which is a State renowned for commerce and industries, as a reference case. Our study, therefore, sought answers to the following research questions:

1. How exposed are Anambra State residents to the problems of plastic pollution?
2. How aware are these residents of any efforts by concerned agencies to combat plastic pollution?
3. Through which media, known to these residents, do the concerned agencies carry out their health campaigns against plastic pollution?
4. What perception do these residents hold about concerned agencies campaigns against plastic pollution?

4. IMPACT OF PLASTIC POLLUTION

According to the United Nations Environmental Programme (2008), global plastic consumption has gone from 5.5 million tons in the 1950s to 110 million tons in 2009. That number is only expected to increase in the next coming years. Plastic pollution is indeed a pressing issue which plagues every facet of our ecosystem. Marine debris, 70% of which is plastic, is negatively affecting more than 800 marine species and causing serious losses to many countries' economies; according to a United Nations report released on the sidelines of the UN Biodiversity Conference. Marine and coastal species - fish, seabirds, marine mammals, and reptiles - are affected by marine debris mostly through ingestion or entanglement. According to the report, 40% of cetaceans, and 44% of seabird species are affected by marine debris ingestion. The effect of ingestion is not always understood, as many ingest microplastics - little pieces of fragments that are less than five millimetres in diameter. Marine debris has an adverse effect in the commercial fishing, shipping, and tourism industries. The report also notes that previous research places the cost of plastic pollution caused by marine debris at \$13 billion. Some of the cost includes repairing vessel damage, clean-up, and decrease in tourism revenues due to polluted beaches. There are also social

impacts such as direct, short-term human health issues (injuries, entanglement, and navigational hazards), and long-term impacts on quality of life.

5. CONCEPT OF ENVIRONMENTAL CAMPAIGN

Rogers and Storey (1987) observe that there is often confusion between the labels “campaign”, “communication campaign or programme”, “media or mass media campaign”, and “intervention”. However, no particular definition adequately covers current practice, and there are many local variations of what is meant by these labels. Indeed, a variety of definitions exists in literature but the following elements of a communication campaign are essential (Rogers & Storey, 1987).

Nevertheless, in understanding campaign, it is crucial to first recognize that a campaign is purposive. The specific outcomes can be extremely diverse ranging from individual level cognitive effects to societal or structural change. However, the bottom line is that such campaign was a deliberate measure aimed at specific goals (Rogers & Storey, 1987).

Secondly, a communication campaign is aimed at a large audience. Rogers and Storey (1987) note that “large” is used to distinguish campaigns from interpersonal persuasive communications by one individual (or a few people) aiming to seek to influence only a few others. So for a communication to be termed campaign it ought to transcend interpersonal and micro group communication to address a relatively large audience.

Thirdly, communication campaigns have a specified time limit. This is not to state that all campaigns are short lived. For example, the initial Stanford Climate Change Prevention Programme ran for three years, however follow-up investigations were conducted over decades (Bord, Fisher & O’Conner, 2007).

The fourth point is that a communication campaign comprises a designed set of organized activities. This is most evident in message design and distribution. Messages are organized in terms of both form and content, and responsibility is taken for selecting appropriate communication channels and media. As Rogers and Storey (1987) point out, even those campaigns whose nature or goal is emancipation or participation involve organized message production and distribution.

In summary, the term communication campaign implies that:

- it is planned to generate specific outcomes;
- in a relatively large number of individuals;
- within a specified time period; and
- uses an organised set of communication activities.

Against the foregoing, environmental campaign could be described as a form of communication campaign aimed at enlightening and achieving behavioural change regarding matters related to preservation, improvement and sustenance of the physical environment (Bord *et al.*, 2007).

Based on the above noted general characteristics of communication campaign, an environmental campaign should be planned to generate specific outcomes. For instance, it might be targeted towards creating awareness on climate change or sanitation and possibly eliciting the desired attitude from the audience (Rogers & Storey, 1987; Hausbeck, Milbrath & Enright, 1999).

Similarly, an environmental campaign should be targeted to a relatively large number of persons. For instance, the target audience could be a community, a state, a region/province or a nation. Furthermore, environmental campaign could be undertaken on the transnational scale such as what is being done by international agencies such as the United Nations Habitat and other bodies (Hausbeck *et al.*, 1999).

An environmental campaign should occur within a specified time period. This characteristic stems from the fact that it is a planned endeavour and not just a spontaneous, haphazard activity. Hence, it has been planned to last from a particular time now to a particular time in the future when the expected outcomes would be assessed towards adjudging the campaign a success or otherwise (Halpern & Bates, 2004).

Lastly, an environmental campaign must employ an organised set of communication activities. In other words, it is a systematically planned communication programme typically involving research, content selection, delivery and evaluation (Rogers & Storey, 1987; Hausbeck, Milbrath & Enright, 1999; Halpern & Bates, 2004; Ojomo, Elliott, Amjad & Bartram, 2015).

6. Mass Media and Environmental Campaign

According to Witte (2000), the mass media “are intensively employed in environmental campaign” p.111. Vast sums are spent annually for materials and salaries that have gone into the production and distribution of booklets, pamphlets, exhibits, newspaper articles, and radio and television programmes.” These media are employed at all levels of environmental campaign in the hope that three effects might occur: the learning of correct environmental information and knowledge, the changing of environmental attitudes and values and the establishment of new behaviour (Witte, 2000, p.113).

Mass media campaigns have long been a tool for promoting environmental preservation, improvement and sustenance (Noar, 2006); being widely used to expose high proportions of large populations to messages through routine use of existing media, such as television, radio, and newspapers. Communication campaigns involving diverse environmental topics and target audiences have been conducted for decades. Such campaigns are frequently competing with factors, such as powerful social norms, and behaviours driven by addiction or habit. Mass media campaigns have generally aimed primarily to change knowledge, awareness and attitudes, contributing to the goal of changing behaviour. However, there has not normally been a high expectation that such campaigns on their own would change people’s behaviour (Wakefield, 2010).

Witte (2000) argues that “theory suggests that, as with other environmental protection efforts, mass media campaigns are most likely to reduce unhealthy attitudes if their messages are reinforced by other efforts. Reinforcing factors may include law enforcement efforts, grassroots activities, and other media messages” (p. 593).

There is a vast literature relating to environmental campaigns. Much theoretical literature is devoted to the topic of effectiveness of communication strategies (Halpern & Bates, 2004). Mass media campaigns, Halpern & Bates (2004) argue, have usually been one element of broader environmental protection programmes with mutually reinforcing components:

- Mobilising and supporting local agencies and professionals who have direct access to individuals within the target population.
- Bringing together partnerships of public, voluntary and private sector bodies and professional organisations.
- Informing and educating the public, but also setting the agenda for public debate about the environmental topics, thereby modifying the climate of opinion surrounding it.
- Encouraging local and national policy changes so as to create a supportive environment within which people are more able to change their behaviour.

7. ENVIRONMENTAL COMMUNICATION AND THE CONCEPT OF RISK

Most environmental communication campaigns involve risk, i.e. risks to people and societal risks. The concept of risk has been at the focus of contemporary thinking in recent years because of the salience and threat of environmental issues, which have received extensive public and media attention (Kitzinger, 1997).

Giddens (1999) observes that most traditional cultures did not have a concept of risk and argues that it is a concept associated with modern industrialized civilization, embodying ideas about controlling or conquering the future. People are forced to negotiate their lives around risks, and to rely increasingly on their own judgments about risks. Experts can assess the likelihood and magnitude of a given risk; however the public understanding of a given risk takes on meaning through our cultural practices.

Elliott (1987) argues that one important cultural site for the production of meanings about risk is media content, including communication campaigns; “the meaning of a particular environmental risk to various groups in society, for example, develops through the continuing and often changing representations of that risk in media content, and in scientific and medical discourses, as well as through other social and cultural practices. For instance, the people may come to understand the risk surrounding climate change based on how the media represent it. It is against this background of changing technical, media and public discourses that environmental campaigns are planned”

Wynne (1996) argues that, just as expert opinion is central to ideas about risk, so too is lay criticism and comment. He observes that, while risks may be debated within scientific or ‘public accountability’ discourses, they are dealt with by most people as individuals in very specific situations, at the level of the local, the private, the mundane, the everyday, and intimate experiences. Wynne (1996) argues that it is essential to examine how perceptions of risks are constructed by local, or as he terms it ‘situated’, knowledge, as well as by expert knowledge. For example,

there are profound differences across class, gender, race, ethnicity, age and other variables in the ways people understand, interpret and respond to environmental risks. Individualism might suggest a degree of choice in negotiating risk, but it is recognized that, within the power structures of our society, some people have more authority over the ways risks are identified, defined as public, and managed, than do other people.

This risk perspective offers invaluable insights for communication campaign planners. This section of communication literature has one point of origin in the environmental sciences, and is particularly important to review because of its parallels to more general communication campaigns (Elliott, 1987).

8. AUDIENCE AND ENVIRONMENTAL CAMPAIGN

An Australian review of mass media environmental campaigns in two areas, cardiovascular risk behaviour and safety restraints (Redman, Spencer, and Sanson-Fisher, 1990) illustrates these moderate effects. The authors began with 24 studies but determined that only nine met their criteria for adequate evaluation methodologies. These nine were further divided into two models of media effects: media only and media as agenda-setting plus community programming. Not surprisingly, they concluded that the media's only campaigns had discouraging results but that most studies of media plus intensive community interventions reported significant changes in behaviour. The authors, however, challenged these positive results by questioning how important the media component was to the success of such combined programmes.

In precise terms, media campaigns may result to some specific effects. These effects, according to Halpern and Bates (2004), include awareness, knowledge, attitudes, and behaviours. These are discussed in the sub-heads below.

9. CHANGING KNOWLEDGE AND AWARENESS

Changing behaviour is the highest priority in any environmental campaign; however, most of the mass media will change knowledge and awareness more easily than behaviour (Redman, Spencer, and Sanson-Fisher, 1990). Theoretically, the mass media are supposed to be most effective in achieving awareness. When measuring awareness as simple recognition of the message, up to 83% levels of awareness have been reported, with a median of 48%. Although, without a pre-message measure, some of this (perhaps up to 9%) may be measurement error, e.g., a desire to please the interviewer.

Ceiling effects must also be considered. If awareness is moderately high before the campaign, there are ceilings on the possible increases and probably these increases are harder to achieve. If both pre and post levels of awareness are available, increases can be calculated based on the percent of audience possible to change. For example, if awareness of the seriousness of global warming was 11% prior to a campaign and 40% after it, the increase, instead of being 29% would be 29% of the possible change of 89% which is 33%. Knowledge gain is clearly achievable using mass mediated campaigns. When exposure is guaranteed, dramatic increases in knowledge (as large as 60%) have been observed. When exposure is not guaranteed but the campaign can saturate a community, knowledge gains around 25% seem feasible. The size of these knowledge gains decrease when the campaigns are national in scope and must compete with numerous other stimuli (Wynne, 1996).

10. CHANGING ATTITUDES AND BEHAVIOURS

Although behaviour is normally considered one of the most difficult objectives to achieve in mediated environmental campaigns, the campaigns reviewed here were quite successful. The literature is beginning to amass evidence that targeted, well-executed mass media environmental campaigns can have small-to-moderate effects not only on knowledge, beliefs, and attitudes, but on behaviours as well, which can translate into major impact given the wide reach of mass media. Such impact can only be achieved, however, if principles of effective campaign design are carefully followed (Rowan, 1996).

There is renewed interest in the possibility of achieving policy goals through behaviour change. For example, a recent report commissioned for the Cabinet Office (Halpern and Bates, 2004) states that: "Behaviourally based interventions can be significantly more cost effective than traditional service delivery." Interventions to change environment-related behaviour may range from a simple face-to-face consultation between a professional and an individual to a complex programmes; often involving the use of the mass media. This briefing looks first at the evidence on the effectiveness of interventions in changing behaviour generally; and second at the evidence concerning mass media campaigns.

Even though mass media environmental campaigns are used extensively, considerable debate continues over their effectiveness. As McGuire (1989) hierarchy of effects model would predict, the size of the effects were greater at the earlier steps, i.e., awareness, and knowledge than the later stages of attitude change, and behaviour change.

11. EMPIRICAL PERSPECTIVE

Aisha –Muktar (2018) conducted a study titled: “Public Acceptance of A Proposed Ban on Plastic Bags in Nigeria : The Case of Yola Jimeta, Adamawa State.” The main objective of the study was to investigate public perception on the Ban of on Plastic Bags. Using a structured questionnaire, the researcher interviewed 200 customers and 10 shop managers in Jimeta Yola. From the quantitative data gathered, customers had a relative degree of awareness on plastic disposal and also know that plastic is harmful to the environment and human health. It was thus recommended that the Nigerian government should conduct awareness programs using social media and traditional media.

Akpoghiran and Okoro (2014) conducted a study titled: “Adopting Broadcast media Sensitization Campaign for Solid Waste Management.” The study came against the backdrop of poor public attitudes of improper waste management. The study thus, examined media sensitization campaigns for solid waste management. Using questionnaire as the instrument of data collection, and situated within the context of the agenda setting theory, the study found that the broadcast media has carried out sensitization campaigns on solid waste management. The inhabitants’ attitude towards solid waste campaign was poor. It was recommended that there should be an aggressive campaign towards changing public attitude towards solid waste disposal.

Akinro (2003) studied the environmental impact of polythene generation and disposal in Akure city, Nigeria. The study investigated five markets which were randomly selected for data collection. The result of the in-depth interview and survey showed that polythene was generated more in dry season than the rainy season. More so, table water sachet topped the list of cellophane wastes generated. It was thus recommended that there should be aggressive campaigns and enlightenment for eopleasses against indiscriminate disposal of plastics.

12. THEORETICAL FRAMEWORK

To place this study in an apt theoretical framework, the knowledge attitude and practices model was chosen. Otherwise referred to by its acronym KAP; this model can serve as an educational diagnosis of a set of people. The main purpose of this model is to explore changes in knowledge attitude and practices of a community or group of people.

KAP study tells us what people know about certain things; how they feel and also how they behave towards such things (Felix & Guntt, 2000). KAP measures the knowledge, attitude and practice. The knowledge possessed by the community or people here refers to their understanding of a given topic, like global warming. Attitude refers to their feeling towards the subject as well as preconceived ideas that they may have towards it; and practice refers to the ways in which they demonstrate their knowledge and attitude through their actions. Here, understanding the levels of knowledge. Attitude and practices will enable more efficient process of awareness creations as it will allow programs to be tailored more appropriately to the needs of the people (Felix & Guntt, 2000).

Applied to this study, the KAP model helps us to understand the people’s response to campaigns against plastic pollution in terms of their knowledge, attitude and practice, in relation to the phenomenon. “Knowledge” this time means how much the audience knows about hazards of plastic pollution, and mitigating measures. “Attitude” means their disposition towards the mitigating measures; while “practices” refers to their actual behaviour (positive or negative) towards these mitigating measures. More precisely, the knowledge of issues surrounding health hazards of plastic pollution cum indiscriminate disposal of plastic could predispose them to some form of positive attitude which could ultimately translate to practices that would mitigate plastic pollution.

The agenda-setting theory holds that the media possess the capacity to confer prominence on issues by virtue of the manner they portray them. It argues that “the media may not tell us what to think but stunningly tells us what to think about” (Baran, 2010, p.256). The theory is one of the most important media theories of the present time (Raiz, 2008, p.8) The concept of agenda setting theory took its name from the idea that the mass media have the ability to carry the salience (importance nature) of items on their news agenda and transfer it to the public agenda. More often than not, journalists deal with news in several important ways. First they decide which news to cover and which to ignore. Then they assess all the available reports, some of these news stories are published in a greater length, and prominently displayed while others receive only brief attention. The newspapers for instance, clearly

state the journalistic salience of an item through its page placement, headline, length etc. Agenda-setting thus describes the transmission of these “saliencies” as one of the most important aspects of the media (Ojobor, 2002).

The theory was formally developed by McCombs and Shaw in the Chapel Hill study of 1968 American presidential election. These researchers tried to compare the salience of issues in news content with the public perception of the most important election issues; they were able to determine the degree to which the media determines public opinion. For them to do this, they examined Lippmann’s idea of construction of pictures in our heads, by comparing the issues at stake with the key issues on the undecided voter agenda, they consequently found evidence of agenda setting by identifying that “salience of the news agenda is highly correlated to that of the voter agenda” (Baran, 2010, p.256).

The agenda-setting research continues to be productive in demonstrating and defining relationship between media’s coverage and the public’s thinking. Like much research on political communication, it was first used to study media’s influence on public perception of presidential candidates, but moved beyond that narrow realm in recent years; researchers have looked at a wider array as well as the influence of agenda setting in other political domains such as public policy formation and other public perception about foreign affairs (McCombs & Shaw, 1972).

The agenda setting theory helps us to view the media as capable of projecting issues related to indiscriminate disposal of plastic, which comes with serious health hazard. Through constant and prominent coverage of the issues, the media will succeed in making them a part of the public agenda, thus stimulating public discussion on them and possibly bringing about the intervention of the concerned authorities, institutions and agencies.

13. METHOD

This study was designed as survey. The area of study was Anambra State , one of the states in South East Nigeria. It comprises both urban and rural areas. Its population is mixed – comprising indigenes and non-indigenes of varying demographics. The industrial and commercial nature of this state made it a good case for the subject matter of plastic pollution. The population of this study was all the residents of Anambra State. The population of Anambra State is 4,177,828 (National Population Commission). A sample size of 400 was determined for the study using Yamane’s formula $n=N/(1+N[e]^2)$.

The sampling procedure was multi-stage in approach. We conducted sampling in stages.

At the first stage, the researcher chose two Senatorial Zone from the three Senatorial zones in Anambra state using the simple random sampling technique. Anambra North and Anambra Central were selected.

At the second Stage, the researcher chose four local governments from each senatorial zone using simple random sampling. For Anambra North, Oyi , Ogbaru, Anambra West, and Ayamelum were chosen while for Anambra Central; Nnewi South, Ekwusigo, Aguata and Orumba North were chosen.

At the third stage we chose five towns per local government, totaling to forty towns.

At the fourth stage, we chose two villages per town totaling 80 villages while at the fifth and final stage of sampling, we chose five person per eight village, totaling 400 persons to whom the questionnaire was administered.

14. RESULTS

Our results show that 58.7% of the respondents are male while 41.3% are female. Thus, there is 17.4% difference between the number of male respondents and female respondents. Also, 13.1% of the respondents were 15 – 20 years; 9.5% were 21 – 25 years; 19% were 26 – 30; 20.6% were 31 – 35; while 9.3% were 36 – 40 years. Similarly, 18.8% of the respondents were 40 – 45; 0.3% were 46 – 50; while 9.5% were above 50. About 47.6% of the respondents were single, 52.4% were married. This leaves 4.8% difference between the married and unmarried respondents representing a fairly evenly distributed case. About 13.9% of the respondents had First School Leaving Certificate; 14.4% had SSCE/Equivalent; 18.8% had NCE/OND/Pre-degree diploma; 34.2% were First Degree/HND holders; while 18.8% had postgraduate degrees. Our data also show that 45.2% of the respondents were government workers; 3.6% were self-employed professionals; 19% were professionals in private firms; 9.5% were artisans/farmers; 0.3% were traders; 18.8% were students; while 3.6% belonged to other professions.

14.1 Anambra State Residents' Exposure to Problems associated with Plastic Pollution

We used question items 6-10 in the question to address residents' exposure to problems of plastic pollution. The results are presented in tables.

Table 1. Respondents who have heard about problems associated with plastic pollution

Variable	Frequency	Percentage
Yes	370	92.5%
No	25	6.25%
I don't know	5	1.25%
Total	400	100%

Data in Table 1 shows that 92.5% of the respondents claimed to have heard about plastic pollution, another 6.25% of the respondents claimed not to have heard of plastic pollution while the remaining 1.25% of the respondents were non committal. This shows that majority of the respondents were exposed to problems associated with plastic pollution.

Table 2. Respondents who have seen a plastic waste dump site/sites

Variable	Frequency	Percentage
Yes	360	90%
No	30	7.5%
I don't know	10	2.5%
Total	400	100%

Table 2 shows that 90% of the respondents affirmed to have seen plastic dump site/sites; 7.5% of the respondents did not; while the remaining 2.5% of the respondents were not certain. This indicates that majority of the respondents have seen plastic dump sites before.

Table3. Respondents who are aware that the indiscriminate disposal of plastic waste poses a health hazard

Variable	Frequency	Percentage
Yes	390	97.5%
No	10	2.5%
I don't know	-	-
Total	400	100%

Data in table 3 show that 97.5% of the respondents were aware that the indiscriminate disposal of plastic waste poses a health hazard while the remaining 2.5% of the respondents were not aware that it posed a health hazard. This shows that majority of the respondents were aware that the indiscriminate disposal of plastic waste can be hazardous to health.

Table 4. Respondents who are exposed to the problems associated with plastic pollution

Variable	Frequency	Percentage
Yes	250	62.5%
No	100	25%
I don't know	50	12.5%
Total	400	100%

Data in Table 4 show that 62.5% of the respondents knew about the problems associated with plastic pollution; 25% of the respondents claimed not to know about the problems associated with plastic pollution while the remaining 12.5% of the respondents was non committal. This shows that majority of the respondents are exposed to problems of plastic pollution.

Table 5. Respondents' rated levels of exposure to problems associated with plastic pollution

Variable	Frequency	Percentage
Very exposed	300	75%
Moderately exposed	70	17.5%
Not very exposed	30	7.5%
Total	400	100%

The data in Table 5 shows that 75% of the respondents were highly exposed to the problems associated with plastic pollution; 17.5% of the respondents were moderately exposed while the remaining 7.5% of the respondents not very exposed to the hazards associated with plastic pollution.

14.2 ANAMBRA STATE RESIDENTS AWARENESS OF EFFORTS TO COMBAT PLASTIC POLLUTION BY THE CONCERNED AGENCIES

In order to determine the residents' awareness of the efforts by concerned agencies to combat plastic pollution, we used question items 11-14 in the questionnaire. The results are shown in tables.

Table 6. Respondents' awareness of the efforts by concerned agencies to combat plastic pollution

Variable	Frequency	Percentage
Yes	180	45%
No	200	55%
Total	400	100%

Data in Table 6 show that 45% of the respondents were aware of efforts to combat plastic pollution; 55% of the respondents were not aware of the efforts by concerned agencies to combat plastic pollution. This shows that most of the respondents were aware of the efforts by concerned agencies to combat plastic pollution.

Table 7. The period the respondents have been aware of the efforts by concerned agencies to combat plastic pollution

Variable	Frequency	Percentage
1-4 yrs	70	17.5%
5-9 yrs	100	25%
10 yrs above	30	7.5%
Can't say	200	50%
Total	400	100%

The data in Table 7 shows that 17.5 of the respondents have been aware of efforts to combat plastic pollution between 1-4years; 25% of the respondents claimed to have known about it for about 5-9 years; 7.5% of the respondents claimed to have known about it for more than 10 years; while 50% of the respondents couldn't determine any length of time they have been aware of the efforts by concerned agencies to combat plastic pollution.

Table 8. Concerned agencies that respondents are aware of their efforts to combat plastic pollution

Variable	Frequency	Percentage
Ministry of environment	20	5%
Institute of Safety Professionals of Nigeria	30	7.5%
Friends of the environment	10	2.5%
National Environmental Standards and Regulation Enforcement Agency (NESREA)	190	47.5%
Could not recall	150	37.5%
Total	400	100%

Table 8 shows that 5% of the respondents said that the Ministry of Environment was the agency they were aware that is combating of plastic pollution; 7.5% said that it was the Institute of Safety Professionals of Nigeria; 2.5%

said that it was Friends of the Environment; 47.5% said that it was NESREA while the remaining 37.5% could not recall any agency. This shows that most of the respondents were aware NESREA was at the forefront of the battle against plastic pollution.

Table 9. Respondents' evaluation of efforts by concerned agencies to combat plastic pollution

Variable	Frequency	Percentage
Making appreciable efforts	220	55%
Not making appreciable efforts	70	17.5%
Not certain	110	27.5%
Total	400	100%

Data in table 9 show that 55% of the respondents agreed that the agencies had put in much effort in the fight against plastic pollution; 17.5% of the respondents were of the view that they had not put in much effort while the remaining 27.5% of the respondents were not certain.

14.3 The Media through Which the Concerned Agencies carry Out Their Health Campaign / Discourses On Hazards of Plastic Pollution

We used question items 15-18 to establish the channels through which agencies charged with environmental protection carried out campaigns against plastic pollution. The results are presented in tables.

Table10. Respondents who believe the media played any role alongside the agencies in campaigning against plastic pollution

Variable	Frequency	Percentage
Believe	170	42.5%
Don't believe	170	42.5%
Can't say	60	15%
Total	400	100%

Data in Table 10 show that 42.5% of the respondents believe that the media had played a role alongside environmental agencies in the campaign against plastic pollution; another 42.5% of the respondents do not believe that the media had played any role; while 15% of the respondents could not commit to any answer.

Table11. The media which had been prominently used by environmental agencies in campaigns/discourses against plastic pollution

Variable	Frequency	Percentage
Television	130	32.5%
Radio	60	15%
Newspaper/Magazine	100	25%
New media	40	10%
Can't say	70	17.5%
Total	400	100%

Table 11 shows that 32.5% of the respondents claimed that television prominently featured campaigns about plastic pollution; 15% of the respondents said it was the radio; 25% of the respondents claimed it was newspaper/magazine; 10% of the respondents said it was the new media, while 17.5% of the respondents could not commit to any answer. This shows that majority of the respondents agreed that it was on television that campaigns about plastic pollution featured prominently.

Table12: The channel which has more significant campaigns

Variable	Frequency	Percentage
Television	130	32.5%
Radio	60	15%
Newspaper/Magazine	100	25%
New media	40	10%
Can't say	70	17.5%
Total	400	100%

Data in table 12 shows that 32.5% of the respondents said that television has had a more significant campaign about plastic pollution hazard; 15% of the respondents held that it was the radio; 25% of the respondents said that it was newspaper/magazine; 10% of the respondents dwelt on the new media while 17.5% of the respondents could not

determine which of the media that has campaigned the most about plastic pollution hazard. This shows that majority of the respondents held that television has had more significant campaign about plastic pollution.

14.4 ANAMBRA STATE RESIDENTS PERCEPTION OF CONCERNED AGENCIES EFFORT IN COMBATING PLASTIC POLLUTION

Table13: Respondents' position on whether concerned agencies have carried out enough health campaigns on plastic pollution

Variable	Frequency	Percentage
Yes	150	37.5%
No	200	50%
I don't know	50	12.5%
Total	400	100%

Data in table 13 shows that 37.5% of the respondents agreed that the concerned agencies have done enough campaign on plastic pollution hazards, another 50% of the respondents agreed that they have not had enough campaign while the remaining 12.5% of the respondents said that they did not know if there had been enough campaign in that regard. This shows that majority of the respondents agreed that there had not been enough campaign from concerned agencies as regards plastic pollution hazards.

Table14: Respondents who think the agencies have done enough in incorporating the media into their plastic pollution campaigns

Variable	Frequency	Percentage
Yes	150	37.5%
No	200	50%
Can't say	50	12.5%
Total	400	100%

Data from table 14 shows that 37.5% of the respondents agreed that the concerned agencies had done enough by bringing the media into their campaigns; 50% of the respondents said that they had not done enough while the remaining 12.5% could not take a position.

Table 15: Respondents' position on the need for inclusion of interpersonal communication in the agencies'/media campaigns

Variable	Frequency	Percentage
Yes	300	75%
No	70	17.5%
I don't know	30	7.5%
Total	400	100%

Data from table 15 show that 75% of the respondents agreed that there is need for interpersonal communication to be adopted in the campaign against plastic pollution by the concerned agencies; 17.5% of the respondents agreed that there is no need for interpersonal communication to be adopted in the campaign against plastic pollution while

the 7.5% of the respondents could not commit to any answer. This shows that majority of the respondents agreed that there was the need for interpersonal communication to be adopted in the campaign against plastic pollution.

15. CONCLUSION

Based on the findings of this study, we concluded that there was still a significant knowledge gap among Anambra residents on the efforts of environmental agencies to combat the problem of plastic pollution; apparently, this could be the reason why there has not been behaviour change amongst the residents on indiscriminate disposal of plastic waste. This would mean that Anambra residents might fail to imbibe the requisite behaviour that would mitigate the impact of plastic pollution. Consequently, the campaign against global indiscriminate plastic pollution appears not to have been exactly successful as far as Anambra residents are concerned.

16. RECOMMENDATIONS

Based on the findings of our study, we recommended that:

- i. There is need to incorporate environmental pollution and plastic pollution education into the school system starting from the primary to tertiary level. This way, Nigerians would become exposed to hazards of plastic pollution from their early years which would, in turn, bring about positive attitude formation in regard to plastic pollution.
- ii. The government should make laws towards regulating indiscriminate disposal of plastic and other activities contributing to environmental pollution. Importantly, the enforcement of such laws should be taken seriously.

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