

# Types and Effects of Solid Waste Generated by Internally Displaced Persons in Camps in Borno State, Nigeria: Counselling Interventions

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## Abstract

*The study investigated the types and effects of solid waste generated by internally displaced persons in Borno State, Nigeria: Counselling interventions. Descriptive survey research design was used for the study. Target population of the study consisted of all the 14,265 IDPs in the 4 government designated camps in Maiduguri Metropolis, Borno State. However, a sample size of 300 IDPs using Krejcie and Morgan (1970) table for determining sample size of a given population, were purposively selected from the volunteered respondents through stratified random sampling techniques and used for the study. 103(34%) of the respondents were male while the remaining 197(66%) were female. The study was guided by four objectives and four research questions comprising of the respondents' demographic characteristics, types and effects of solid waste generated by the internally displaced persons in the study area. The data collected were analysed using descriptive statistical techniques of frequency counts, percentages and rank order. The result revealed that nylon of pure (seal) water, polythene bags, used wood materials, rags, cartons, sanitary pads, old/Used mattresses, charcoal/ash, used mats, used torch batteries, harvest residue and construction materials constituted the major solid wastes generated by the internally displaced persons in the study area thus, ranked from 1<sup>st</sup> to 9<sup>th</sup> and that breeding ground for mosquitoes, transmission of ailments and odour comprised the major effects of the wastes generated by the internally displaced persons in the camps in Maiduguri Metropolis. Based on these findings, it was recommended that professionally trained counsellors and public health officers should be attached to all IDP camps in Borno State with a view to providing counselling on regular intervals pertaining to keeping a clean and healthy environment.*

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**Key Words:** Solid Waste, Types, Effects, Internally Displaced Persons

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## Introduction

Waste has been and perhaps will remain the focus of educationists, environmentalists, researchers, policy makers and counsellors up to the second quota of the next century. This is based on the visible hazardous consequences of waste on quality of the ecology on life of both fauna and flora. The generation, disposal, segregation and management of waste is one of the most intractable problems that render most developmental programmes invalid especially in third world nations (Ngohi, 2019). The issue of the Internally Displaced Persons (IDPs) has become a global concern and is assuming an alarming rate in many parts of the world. It is becoming worrisome in Nigeria as their number keeps growing exponentially by the day. It has become a negative trend to the society taking into account the volumes of waste generated on daily basis. The rise in the activities of the terrorist's sect brought about adverse effects on the general populace. In recent times, the intensity of internal displacement has become a global phenomenon. Individuals and families are forced to move from their long-term abode to new places due to factors beyond their control (Mburza, Katsala & Amuda, 2020).

Internally displaced persons, upon arrival at their new but temporary location have needs such as reasonable shelter, food, portable drinking water, healthcare, education, security, clothing and information which must be met in order to stay alive, pulsating and inhibit socio-cultural, religious and security consequences both on themselves and host communities alike. Issues of physical security, threats of forcible returns to expanse of origin where conditions are not safe, the rights to freedom of movement and absence of strong domestic institutional mechanism for implementing the international protection regime remain a predicament (UNHCR, 2006). Oucho (2007) defined Internally Displaced Persons as every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or whole of his/her countryside, realm of origin or nationality, is compelled to leave, depart or flee his/her place of habitual residence and seek refuge in another place outside his/her country, home of origin or nationality.

The environment is the surroundings or conditions in which a person, animal, or plants lives. It also consists of "the air, water and land in or on which they live". This means that, environment is the sum of all external factors, both biotic and abiotic, to which an organism is exposed. The biotic factors include influences by members of the same and other species on the development and survival of the individual while the primary abiotic factors include light, temperature, water and atmospheric gases (UNHCR, 2006). Man is both a creature and molder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth. However, through science and technology, man gets hold of the power to transform his environment in countless ways and on an unprecedented scale. Every aspect of the environment (natural and the anthropogenic) is essential for human well-being in all dimensions (Oucho, 2007).

The displaced persons have lost sources of livelihood, resource and savings to disaster and suffer great hardship, thus, it becomes the responsibility of the government to provide them with protection among other basic needs during their stay in camps as well as adopting and implementing policies including counselling techniques on management of trauma and keeping environment clean, except where the State violated human rights treaties in treatment of

IDPs. The UHCHR (2006), inter-governmental, non-governmental agencies and host governments endeavor to support and protect refugees, as a result have amassed useful information not only on the causes but also on the consequences of refugees in host communities. This means that every analysis of environmental impact of displaced persons indicates negative and positive impacts on flora and fauna, energy and heating sources, water bodies, soil quality, environmental sanitation, waste disposals and a variety of infrastructure among the most affected environmental issues (Oucho, 2007).

Jacobsen (2020) observes that camp settlement precipitates environmental problems, initially with “start-up” costs of bulldozing to clear land for the camp and thereby destroying the resources in site; insatiable basic need of the camp population that depends on resources in the vicinity; the difficulty of satisfying the day-to-day operation of camps through the control of disease-carrying vectors (rats, mosquitoes and other parasites), using insecticides and pesticides that contaminate the soil and water for human beings and animal and water accessibility constrained by poorly planned supply sources. For instance, presence of IDPs/Refugees camps has been characterized by influx of diseases such as outbreaks of measles, high-fever/malaria, intense dysentery, skin disease like scabies and worms and Sexually Transmitted Infections (STIs) including HIV/AIDS in addition to fire outbreaks, pills and cans of waste products that may serve as breeding grounds for mosquitoes and other dangerous reptiles (Whitaker & Syrakoy, 2018)

In the same vein, Kalpers (2001) reported that Pollution is another environmental problem occasioned with displaced persons. In their determination to subsist at all cost, they deliberately or inadvertently pollute surface and ground water, in the process giving rise to infectious diseases that threaten both human and wild lives. Poor sanitary conditions led to indiscriminate waste disposal in the IDP camps in Borno State and lack of adequate pit latrines led to epidemics like cholera and meningitis which tempt INGOs to construct potable water sources for villages adjacent to refugee camps (UNEP, 2000). In some instances, refugees compete for scarce water resources; deplete the available water sources and force the diversion of river courses to the camps, away from the villages (Whitaker & Syrakoy, 2018). Findings on the environmental impact of displaced persons often results in both positive and negative nuances. Oucho (2007) reported that state-of-the-art analysis of the environmental impact of population displacement recognizes this ambivalence, but acknowledges unanimity on the fact that little research has been undertaken on long-term negative impact, and that no truly comprehensive or scientific study has ever been carried out, even studies, project documents or related institutions provide information that is either superficial, erratic, exaggerated or limited with regard to time, sector or geographical area (Bishop & Garnett, 2020).

Waste generation, disposal and management in IDP camps is a major source of concern to the environmentalists, counsellors, educationists and the governments at all levels largely due to fears about disease control, poor air quality, mental and physical well-being of the residents and the overall degradation and contamination of the physical environment by man-made substances which constitutes pollution. Spontaneous and indeterminate influx of displaced persons to urban centers incurs the depletion of natural resources and places a strain on infrastructure which hurts the environment in the long term (Etuonovbe, 2019). It is against this background that this study seeks to investigate the types and effects of solid waste generated by the internally displaced persons in government designated camps in Maiduguri, Borno State.

### **Statement of the Problem**

Activities of the non-state actors in possession of arms or weapons of war (insurgents) is continually gaining ground in Borno State despite the billions of naira injected by the Federal and State Governments towards eradicating their menace in the entire north-east Sub-region. It seems the insurgents are multiplying in their potency and devastating activities signifying reinforcement in their numerical strength and vicious tendencies ensuing in the impromptu and exodus flee of rural dwellers from their ancestral homes and took refuge in various camps within and outside the nation for their dare lives. The robustness with which the joint military (Nigeria, Niger, Chad and Cameroun) operations dismantled and crippled the insurgents has now given way for the insurgents to reconvene and re-strategize in the outskirts of Borno State been the epicenter for a more vigorous attacks, bombings and killings which resulted in the perpetual increase in the number of internally displaced persons in camps from virtually all Local Government Areas across the length and breadth of the State. The unavoidable increase in the number of internally displaced persons in the camps in Maiduguri as a consequence of nefarious activities of the insurgents give rise to daily increase in volumes of wastes generated and indiscriminately disposed. Thus, knowing the types and effects of solid wastes generated by the internally displaced persons in government designated camps in Maiduguri, Borno State is what this study seeks to establish.

### **Objectives of the Study**

The study was designed to achieve the following objectives:

1. Identify the demographic characteristics of the Internally Displaced Persons in Maiduguri, Borno State
2. Identify the types of solid waste generated by the Internally Displaced Persons in Maiduguri, Borno State
3. Determine the effects of solid waste generated by the Internally Displaced Persons in Maiduguri, Borno State

### **Research Questions**

The following research questions were answered in this study:

1. What are the Demographic Characteristics of the Internally Displaced Persons in Camps in Maiduguri, Borno State?
2. What are the types of solid waste generated by the Internally Displaced Persons in Maiduguri, Borno State?
3. What are the effects of solid waste generated by the Internally Displaced Persons in Maiduguri, Borno State?

### **Methodology**

Survey research design was adopted for this study. Target population of the study comprised of 14,265 IDPs in the 4 government designated camps in Maiduguri Metropolis, Borno State. However, a sample size of 300 IDPs using Krejcie and Morgan (1970) table for determining sample size of a giving population, were purposively selected from the volunteered respondents

through stratified random sampling techniques and used for the study. 103(34%) of the respondents were male while the remaining 197(66%) were female. The stratification was based on gender, highest educational qualification, local government of origin, marital status and occupation. Researchers' developed 23 items open ended questionnaire tagged Waste Generation Questionnaire (WAGEQ) was the instrument used to collect data for the study. The instrument was divided into 3 sections (A-C). Section A elicited information on demographic characteristics of the subjects such as gender, marital status, occupation and educational qualification. Section B collected facts on types of solid waste generated while Section C sought data on the effects of the waste generated at the camps.

The instrument was validated by experts in the fields of Environmental Studies, Measurement and Evaluation as well as Guidance and Counselling of the University of Maiduguri, Borno State. The instrument has a validity index of .64 and reliability coefficient of .76 which was considered adequate, appropriate and relevant for the study. The instrument was pilot-tested among 100 IDPs in 2 camps outside those used for the study and split-half method was employed in analyzing it. The instrument was administered by the researchers with the help of 2 research assistants (CJTF Staff) in each of the camps under study. Purpose of the study was explained to each participant and that participation was voluntary, copies of the questionnaire were administered and filled on the spot which ensures 100% retrieval. Data collected for the study was analyzed using descriptive statistical techniques of frequency counts, percentages and rank order. Results were presented in Tables 1 to 3.

## Results

**Research Question One:** What are the Demographic Characteristics of the Internally Displaced Persons in Camps in Maiduguri, Borno State?

**Table 1: Demographic Characteristics of the Internally Displaced Persons in Maiduguri**

| S/No | IDP Camps    | Response        | Gender         |                | Age in years |           |            | Education level |            |           |
|------|--------------|-----------------|----------------|----------------|--------------|-----------|------------|-----------------|------------|-----------|
|      |              |                 | Male           | Female         | 18-37        | 38-47     | 58 & above | Info            | O/L        | A/L       |
| 1    | NYSC         | 30(10)          | 12(3.9)        | 18(6.0)        | 15           | 8         | 7          | 2               | 15         | 13        |
| 2    | MOGCOLIS     | 30(10)          | 10(3.3)        | 20(6.7)        | 18           | 7         | 5          | 4               | 18         | 8         |
| 3    | EYN          | 30(10)          | 08(2.7)        | 22(7.4)        | 13           | 9         | 8          | 6               | 16         | 8         |
| 4    | BAKASI       | 30(10)          | 11(3.7)        | 19(6.4)        | 15           | 10        | 5          | 5               | 15         | 10        |
| 5    | ARABIC T.    | 30(10)          | 09(2.9)        | 21(7.0)        | 17           | 8         | 5          | 4               | 17         | 9         |
| 6    | DALORI 1     | 30(10)          | 12(3.9)        | 18(6.0)        | 14           | 11        | 5          | 5               | 17         | 8         |
| 7    | DALORI 2     | 30(10)          | 08(2.7)        | 22(7.4)        | 14           | 9         | 7          | 6               | 19         | 5         |
| 8    | T. VILLAGE   | 30(10)          | 12(3.9)        | 18(6.0)        | 17           | 6         | 7          | 7               | 14         | 9         |
| 9    | ST. HOTEL    | 30(10)          | 11(3.7)        | 19(6.4)        | 18           | 7         | 5          | 4               | 17         | 9         |
| 10   | GOV. COLL    | 30(10)          | 10(3.3)        | 20(6.7)        | 15           | 7         | 8          | 5               | 14         | 11        |
|      | <b>Total</b> | <b>300(100)</b> | <b>103(34)</b> | <b>197(66)</b> | <b>156</b>   | <b>82</b> | <b>62</b>  | <b>48</b>       | <b>162</b> | <b>90</b> |

**Note:** All figures in parentheses are percentages of the raw scores

Table 1 revealed that 103(34%) of the respondents were male while 197(66%) were female, 156(52%) of the respondents fall within the age range of 18 - 37 years, 82(27%) fall within the age range of 38 - 47 years while 62(20%) fall within the age range of 58 years and above. Furthermore, 48(16%) of the respondents had informal education, 162(54%) obtained high

school education (O/L) while 90(30%) acquired advanced/higher education (A/L). Thus, statistics on Table one show that the research is gender sensitive, has informed respondents, and possesses the ability to give reliable and valid responses to the instrument.

**Research Question Two:** What are the Types of Solid Waste Generated by the Internally Displaced Persons in Maiduguri, Borno State?

**Table 2: Types of Solid Waste Generated by Internally Displaced Persons in Maiduguri**

| S/No.        | Waste                      | Responses        | Rank             |
|--------------|----------------------------|------------------|------------------|
| 1            | Nylon of pure (seal) water | 20(6.7)          | 1 <sup>st</sup>  |
| 2            | Polythene bags             | 19(6.3)          | 2 <sup>nd</sup>  |
| 3            | Used wood materials        | 18(6.0)          | 3 <sup>rd</sup>  |
| 4            | Rags                       | 18(6.0)          | 3 <sup>rd</sup>  |
| 5            | Cartons                    | 18(6.0)          | 3 <sup>rd</sup>  |
| 6            | Sanitary Pads              | 17(5.7)          | 6 <sup>th</sup>  |
| 7            | Old/Used Mattresses        | 17(5.7)          | 6 <sup>th</sup>  |
| 8            | Charcoal/Ash               | 17(5.7)          | 6 <sup>th</sup>  |
| 9            | Used Mats                  | 14(4.7)          | 9 <sup>th</sup>  |
| 10           | Used Torch Batteries       | 14(4.7)          | 9 <sup>th</sup>  |
| 11           | Harvest Residue            | 14(4.7)          | 9 <sup>th</sup>  |
| 12           | Construction Materials     | 14(4.7)          | 9 <sup>th</sup>  |
| 13           | Broken Pots                | 13(4.3)          | 13 <sup>th</sup> |
| 14           | Broken Bottles/Glasses     | 13(4.3)          | 13 <sup>th</sup> |
| 15           | Metals/Nails               | 11(3.6)          | 15 <sup>th</sup> |
| 16           | Cans                       | 11(3.6)          | 15 <sup>th</sup> |
| 17           | Used Tyres                 | 10(3.3)          | 17 <sup>th</sup> |
| 18           | Plastics                   | 10(3.3)          | 17 <sup>th</sup> |
| 19           | Jerry cans                 | 9(3.0)           | 19 <sup>th</sup> |
| 20           | Roofing sheets             | 9(3.0)           | 19 <sup>th</sup> |
| 21           | Expired Drugs              | 8(2.7)           | 21 <sup>st</sup> |
| 22           | Leftover food              | 6(2.0)           | 22 <sup>nd</sup> |
| <b>TOTAL</b> |                            | <b>300(100%)</b> |                  |

**Note:** All figures in parentheses are percentages of the raw scores

Table 2 indicated that nylon of pure (seal) water, polythene bags, used wood materials, rags, cartons, sanitary pads, old/Used mattresses, charcoal/ash, used mats, used torch batteries, harvest residue and construction materials constituted the major solid wastes generated by the internally displaced persons in camps in Maiduguri thus ranked from 1<sup>st</sup> to 9<sup>th</sup> while broken pots, broken bottles/glasses, metals/nails, cans, used tyres, plastics, jerry cans, roofing sheets, expired drugs and leftover food comprised the least solid wastes generated by the internally displaced persons in the study area thus ranked 13<sup>th</sup> to 22<sup>nd</sup>

**Research Question Three:** What are the effects of solid waste generated by the Internally Displaced Persons in Maiduguri, Borno State?

**Table 3: Effects of Solid Waste Generated by Internally Displaced Persons in Maiduguri**

| S/No. | Effects                        | Responses        | Rank            |
|-------|--------------------------------|------------------|-----------------|
| 1.    | Breeding Ground for Mosquitoes | 75(25)           | 1 <sup>st</sup> |
| 2.    | Transmission of Ailments       | 75(25)           | 1 <sup>st</sup> |
| 3.    | Odour                          | 66(22)           | 3 <sup>rd</sup> |
| 4.    | Procreation Areas for Flies    | 49(16)           | 4 <sup>th</sup> |
| 5.    | Breeding Space for Rats        | 35(12)           | 5 <sup>th</sup> |
|       | <b>Total</b>                   | <b>300(100%)</b> |                 |

**Note:** All figures in parentheses are percentages of the raw scores

Table 3 indicated that breeding ground for mosquitoes, transmission of ailments and odour comprised the major effects of solid wastes generated by the internally persons in camps in Maiduguri thus, ranked from 1<sup>st</sup> to 3<sup>rd</sup> while procreation areas for flies and breeding space for rats constituted the least effects of solid wastes generated by the internally displaced persons in the study area thus, ranked 4<sup>th</sup> to 5<sup>th</sup>

### Discussion

The result of this study revealed that gender is sensitive, has informed respondents, and possesses the ability to give reliable and valid responses to the instrument. The number of females outnumbered the males in all the internally displaced persons' camps under the study. This shows that the women are the worse affected by the insurgency. In agreement to the findings of this study, the work of Mburza, Katsala & Amuda (2020) found that the rise and decline in the activities of the terrorists sect has brought about adverse effect on the general populace especially women and children. The intensity of internal displacement perpetrated by the insurgents has become a topical issue in the light of other global phenomenon. Individuals and families are forced to flee their ancestral abode in exodus to new places due to factors beyond their control. This means whenever crises occur the worst affected are women, children and the destitutes. Therefore, the stakeholders should pay more attention to the vulnerables in all perspectives with a view to getting them stabilized.

The finding of this study revealed that nylon of pure (seal) water, polythene bags, used wood materials, rags, cartons, sanitary pads, old/Used mattresses, charcoal/ash, used mats, used torch batteries, harvest residue and construction materials constituted the major solid wastes generated by the internally displaced persons in the government designated camps in Maiduguri. Others

include broken pots, rags, cartons, sanitary pads, broken bottles/glasses, metals/nails, cans, used tyres, plastics, jerry cans, roofing sheets, charcoal/ash, used mats, used torch batteries expired drugs and leftover food. In agreement with this finding are Whitaker & Syrakoy (2018) and Kalpers (2001) who found that presence of IDP/refugee camps has been associated with an influx of diseases such as outbreaks of measles, high-fever/malaria and intense dysentery, skin disease like scabies and worms, and Sexually Transmitted Infections (STIs) including HIV/AIDS. This shows that displaced persons deliberately or inadvertently pollute the environment thus, giving rise to infectious diseases that threatening them and others. There is therefore, the need for effective counselling in the IDP camps to curtail the menace of indiscriminate dumping or littering of waste. Counselling can greatly improve the poor sanitation and waste dumps all over IDPs camps in Borno State and encourage the provision of adequate pit latrines that induce epidemics such as cholera and meningitis.

The finding of this study also revealed that breeding ground for mosquitoes, transmission of ailments and odour comprised the major effects of solid wastes generated by the internally displaced persons in the government designated camps in the study area. This finding corroborates the earlier study of Ngohi and Mala (2009) who expressed that unnecessary dumping of solid waste in the environment serves as a breeding ground for mosquitoes, snakes and reptiles that may be a threat to human life.

### **Conclusion**

Based on the findings of this study, it is concluded that gender is sensitive, has informed respondents, and possesses the ability to give reliable and valid responses to the instrument. The result revealed that nylon of pure (seal) water, polythene bags, used wood materials, rags, cartons, sanitary pads, old/Used mattresses, charcoal/ash, used mats, used torch batteries, harvest residue and construction materials constituted the major solid wastes generated by the internally displaced persons in the government designated camps in Maiduguri Metropolis, Borno State. The results also revealed that the discarded solid waste materials by the IDPs serve as breeding spaces for mosquitoes, insects, rats, transmission of ailments and odour in the government designated camps in Maiduguri Metropolis, Borno State.

### **Recommendations**

Based on the findings, the following recommendations were made:

1. Trained Counsellors and public health officers should be attached to all IDP camps in Maiduguri Metropolis, Borno State.
2. IDPs in the camps should be giving counselling on regular intervals with a view to creating awareness and sensitisation on the need for keeping the environment clean.
3. The Borno State Environmental Protection Agency (BOSEPA) should be made to provide all IDP camps with waste bins in addition to evacuating such waste on regular basis.

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