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IMPLICATIONS OF INDISCRIMINATE WASTE DISPOSAL ON THE HEALTH STATUS OF RESIDENTS IN NASARAWA STATE-NIGERIA

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Abstract

The process of urbanization that has resulted in the growth of cities calls for effective and efficient waste management and general town planning. In Nigerian towns and cities in the last few decades have generated huge waste that has been a source of concern. This study examines the implication of indiscriminate waste disposal on the health status of residents in Nasarawa State, Nigeria. The study utilizes the reasoned action theory to explain the impacts of indiscriminate waste disposal on the health of residents in Nasarawa State, Nigeria. Data collected for this paper were predominantly through secondary sources. The findings show that indiscriminate waste disposal has negative impacts on the health status of residents of Nasarawa State-Nigeria. Indiscriminate waste disposal leads to breeding of diseases and others health complications where many lives are lost due to filthy environment related disease such as diarrhoea, malaria, cholera. Therefore, the paper recommends that there should be attitudinal change among residents of Nasarawa state toward waste disposal. Proper awareness and sensitization campaign should be carried out to educate the general public on the danger caused by indiscriminate waste disposal and on environmental laws. Government should make efforts to improve waste disposal management system by providing necessary facilities for house to house and street to street waste collection.

Keywords: Implication, Indiscriminate, Waste Disposal, Health, Resident, Nigeria

Introduction

Waste management has become an important issue confronting both developed and developing countries. The rate of waste generation has continued to increase, due to massive population growth, lifestyle choices, consumption patterns and technological advancement (Asase, Yanful, Mensah, Stanford & Amponsah, 2009). Waste generation and disposal are among the pressing environmental and public health issues in the World today. Miller (2005) noted that as more countries develop and population growth rates increase around the World, the amount of waste generated becomes a major environmental problem. It is warrying to note that, the problem of waste is inextricably linked to changing life styles and consumption patterns occasioned by urbanization and emergence of modern civilization (WHO, 2004; Nwosu, 2002; Awoso, Taiwo, Gladebo & Arimoro, 2010Momodu, Dimuna & Dimuna, 2011).

The problem of indiscriminate waste disposal dates back to the time when urbanization started and since then, there has been an increasing rate of refuse generation in Nigerian towns and cities. The generation and accumulation of waste are beginning to produce health, social, economic and environmental problems in significant proportions. These problems are particularly acute in regions with the experience of high population growth, which result in the generation

of high amount of waste with no land to dispose them (Enebong, 1986). The continuous dumping of refuse and open defecation has resulted in bad odour and therefore result to the attraction of unwanted insects such as flies and mosquitoes to the environment. Persistent dumping of both household and non-household wastes has led to severe sanitation problems with increased risks of the spread of communicable diseases such as cholera, malaria and typhoid fever in many parts of Nigeria. The indiscriminate dumping of waste along residential buildings, roads, and drainages streets is very worrisome; no doubt these have causes great health and environmental problems. Besides it has resulted in the annual flooding in Nigeria which is all associated to inadequate waste disposal materials on our homes, institutions, industries and roads, etc. (UNEPA, 2020).

A major environmental challenge facing urban centres in Nigeria can be attributed to government's inability in financing most waste management at different levels. It will be very difficult to hinder humans from their different activities; however, it is a duty to effectively palliate wastes from our various activities since everybody is a stakeholder to the environment. It is as the result of the aforesaid that this paper seeks to examine indiscriminate waste disposal and its implications on the health status of residents in Nasarawa State-Nigeria.

Nasarawa State is one of the state in North central Nigeria bordered to the east by the state of Taraba and plateau to the North by Kaduna and Federal Capital Territory (FCT), makes it a highly commercial and industrialized and fastest growing city in the county, experiencing a high level of migration from other villages, towns and cities.

Generation and accumulation of waste in Nasarawa state is beginning to produce social, economic and environmental problems. These problems are associated with urban growth and population growth. According to Nasarawa state waste management Board, waste generation in the state alone on daily basis is 649 tonnes of waste,4543 tonnes weekly and 233,640 tonnes of waste yearly (NASWAMSA). In recent years, humans generate more waste, not only because of an increase in population but also due to the change in the pattern of consumption and various composition of waste (Udo, Esezobor, Afolalu, Onovo, Ongbali & Okokpuji, 2018).

In sub-Saharan Africa particularly in Nigeria, waste generation and its likely implications on the health status of residents'/households quality of environment and the urban landscape have become burning national issues, for example in Nigeria cities such as Lagos, Port Harcourt, Kano, and suburbs of Abuja to mention a few in Nigeria are grappling with mounting heaps of wastes dumped indiscriminately. Such wastes emanate from household or domestic sources, markets, shopping malls, business centres, schools and eateries. Also pathetic is haphazard dumping of hazardous commercial and industrial wastes which are a clear violation of clean air and health edicts in the country's environmental sanitation laws, rules and regulation (UNEP, 2003). United Nations in its August, 2004 report noted with vehement regret that while developing countries are improving access to clean drinking water they are falling behind on sanitation goals. Makwara (2013) noted that there is a similar gory picture painted in a joint report by UNICEF and WHO that about 2.4 billion people will likely face the risk of needless disease and death by the year 2015 because of bad sanitation-decaying or non-existent sewage system, and toilets fuels the spread of diseases like cholera and basic illness like diarrhoea, which kills a child every 21 seconds. The worst hit by poor sanitation are the rural poor and residents of slum areas in fast growing cities, mostly in Africa and Asia (Awoao et al, 2010). In the past, both legal and institutional frameworks have been established to mitigate the menace of indiscriminate waste disposal and other environmental problem.

For instance, the issue of environmental and waste generation in Nigeria is on the increase due to the rise in population resulting from the techno-economic

development in cities and the pattern of economic production and consumption of materials (Gutberlet, 2018). Nigeria estimated waste generation rate per capital per day is between 0.65kg and 0.95kg. This constitutes over fifty percent of the total amount of waste generated in sub-Sahara Africa (Edet & Maduabuchi, 2019). The current waste management practices in the nation are fast becoming a national issue and unsustainable, leading to apparent environmental risk (Agwu, 2012; Ike, Ezeine, Anijiofor & NikDaud, 2018). In 2019, over 32million tons of solid wastes were generated annually, of which onethird of the generated waste is collected. Indiscriminate disposal has resulted in blockage of drains, and obstruction of water bodies. Inappropriate collection and disposal of wastes are gradually leading to an environmental problem as the nation presently lacks sufficient budgetary requirements for implementing integrated waste management systems across the states (UNEPA, 2020).

In most developing countries like Nigeria, laws, policies, statutes, and regulations on waste management are underdeveloped, and even existing ones are poorly implemented. Generally, laws involving waste management were mainly formulated and articulated. The poor state of waste management system in the nation is a reflection of its laws and policies (Opodo & Oluwatayo, 2016). There are several loopholes in the governmental policies on waste management. Though the public is encouraged to partake in the monthly clean-up exercise, however, the government has failed in providing disposal sites as a form of compliment for the efforts of the citizens. In some of the states in the country, it has been reported that there is no articulate piece of legislation that deals with waste management, and it has been argued that it's owing to a weak institutional, legal framework, and administration of policies. Similarly, government policies that are in place lack strategies for actualization. In addition, a review of the legislative aspect of waste management has been suggested in order to work towards achieving set objectives on sustainable waste management.

Furthermore, an all-inclusive management approach has been proposed which entails waste prevention, reuse, reclaim, recycle, composting, and generation of energy. Despite some good policies that are in place, proper implementation remains a significant challenge; for instance, a comprehensive environmental impact assessment is meant to be submitted during project planning before approval. However, this critical regulation is frequently overlooked. Several authors have criticized the implementation and enforcement of environmental laws in Nigeria. Enforcement of environmental laws remains an issue of concern, control, and management of environmental legislation that has achieved very little success (Alabi, Kasim & Lasisi, 2020). Therefore, this study examines the effects of indiscriminate waste disposal on the health of residents in Nasarawa State, Nigeria.

Conceptual Issues

Concept of Waste

Waste has been variously defined by experts and environmental studies scholars. The common denominator in their definitions is that waste is any material that is no longer in use and discarded for their lack of perceived value. Waste may be in solid and fluid forms; it is this feature that defines its typology or categorization (Makwara, 2011). He further described waste as “any movable substance or material that is perceived to be of no further use and therefore should be discarded”. Waste as any material that is discarded because it has served its purpose or is no longer useful. Solid waste comprises all the wastes arising from human and animal activities that are normally solid, discarded as useless or unwanted. Waste according to Ezechi, Nwabuko, Enyinnaya and Babington (2017) is a useless and unwanted products of human domestic and industrial activities released into the environment. It can be a solid material, liquid, semi-solid or container of gaseous material.

Waste is unwanted, useless materials, junk trash and no longer needed materials that result from domestic or household activities or consumption. Thus, waste can

either be in liquid or solid forms. Liquid wastes include all dirty water from bathroom, toilet (water closet), and kitchen and sometimes rain water collected by gutters. While solid wastes include all other rubbish household members accumulate such as waste foods, pieces of papers, broken bottles, ashes from fire, cloths, cellophane bags, empty cans and tins, broken plates (Asare, Quartey & Amu, 2008).

In the opinion of Kumar, (2007) waste is almost anything that has served its original intended purpose and is being discarded. In effect, there is no human endeavour that does not result in waste creation. Wastes as opined by Oluwade (2009) are refuse (empty containers, papers rubbish) sewage (faeces, water urine) and industrial waste (chemical nuclear) that result from the manufacturing of certain substances, materials and equipment. Waste can be a solid material, liquid, semi-solid or container of gaseous material. For the purpose of this study, waste is defined as items that are ready to be discarded after being used which could be in a solid or a liquid form. Many different types of wastes are generated, including municipal solid waste, hazardous waste, agricultural and animal

Indiscriminate Waste Disposal

Indiscriminate waste disposal refers to unlawful disposal of waste in undesignated spaces such as open or vacant land, sources of water and other areas (Achi et al. 2012; Okechukwu et al. 2012; Machete & Shale 2015). According to Abdullahi, Ajibike, Man-ugwueje and Ndububa (2014) defined indiscriminate waste disposal as the disposal of solid and liquid waste without taking necessary measure. Indiscriminate waste disposal is a process in which waste is disposed of by dumping in open spaces, water bodies and surface drains as a result of inadequate infrastructure and ignorance of inhabitants (United Nations Environmental Programme, 2010). Indiscriminate waste disposal according to Ifeoluwa (2019) is define as the unlawful manner of dumping these refuse such as garbage, sludge from water supply or manufacturing waste, air pollution control facilities and other un-useable materials without considering the adverse effect on human health. For the purpose of this paper, indiscriminate waste disposal is conceptualizing as the inadequate dumping of refuse which could pose a challenge on the health of the populace.

Concept of Health

Health is a term that most people use in everyday life without give it much thought. However, when people are asked to define exactly what health means a considerable divergence in view and this is reflected academic debates about health. Health can be defined, within this frame this framework, as the absence of disease. At the other extreme, this is the definition of health employed by the World Health Organization-put of the United Nations. According to the World Health Organization (WHO, 1946), "Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity." Conversely, Huber, Knittnerus, Green, de Horst, Jadad, Kromhout, Leonard, Loig, Loureiro, der Meer, Schnable, van Weel and Smid. (2011) argued that the WHO definition of health as "complete wellbeing" is no longer fit for purpose given the rise of non-communicable diseases (NCDs) like obesity, hypertension and depression.

Consequently, Huber, *et al.* (2011) proposed an alternative definition, which includes changing the emphasis towards "the ability to adapt and self-manage in the face of social, physical, and emotional changes and to function with fulfilment and a feeling of wellbeing with a chronic disease or disability." Although, WHO (2006) in order to include both the communicable and non- communicable diseases, have elaborated on their earlier definition of health, by adding, "Wellbeing is the optimal stage of health of individuals and groups." This concept of wellbeing is significant, because it encompasses the realization of the fullest potential of an individuals' health, physically, mentally and socially, in accordance with the World Health Organization definition of health (WHO, 1946).

Theoretical Framework

This paper is positioned within Reasoned Action theory. The theory was postulated by Fishbein and Ajzen in 1975 and reviewed in 1980, aimed to explain the relationship between attitude and behavior within human action. It is mainly used to predicts how individuals will behave based on pre-existing attitudes and behavioral intentions The theory posited that a person's intention to perform a specific behaviour is a function of two factors: 1) attitude (positive or negative) toward the behaviour and 2) the influence of the social environment (general subjective norms) on the behaviour and that the attitude toward the behaviour is determined by the person's belief that a given outcome will occur if he or she performs the behaviour and by evaluation of the outcome been determined by the attitudes towards behavioural outcome and public opinion

Thus, when people act on beliefs that they have formed about a behavior, they engage in a reason but not necessarily rational process through identifying the primary determinants of behavior and sources of these determinants variables.

In the context of this study, the Reseasoned Acton Theory provide the reason why waste managers in Nasarawa state engage in indiscriminate waste disposal is influenced by the waste managers' attitude and social environment. The waste managers' attitude towards waste management is guided by their belief and evaluation of the effects of waste management on health and environment. If they belief that poor and discriminate waste disposal will adversely affect health and environment, they will be motivated to be committed to wastes management. However, they made no provision for incinerator for dumping of waste due to high cost of land , land encroachment instead the use their for building

Related Literature Implication of Indiscriminate Waste Disposal on Health Status of Residents in Nasarawa State

Exponential population growth and uncontrolled industrial development are seriously degrading the urban and semi-urban environment in Nigeria, placing serious damage on natural resources and impeding efficient and sustainable development in the country. Ogidi,Sokoye (2019) observed that the issue of environmental sanitation is regulated to the background probably because residents are careless about the state of their environment. This is ironical because ideally Mararaba supposed to have clean environment because the residents are mainly civil servants who are educated and are believe to understand the importance of living in a clean environment.

Similarly, Emily (2004) asserted that when waste is not collected properly, unsanitary conditions develop and pose environmental and human health risks. The prevalence of parasites, tetanus, malaria, hookworm, cholera and diarrheal in most cities in Nigeria is attributed to the unsanitary condition in these cities. Oyediran, (2004) unveils that unsanitary disposal of solid waste promotes facial-oral transmission of diseases through facial contamination of the hands, food and water. He further asserted that solid waste dumps provide breeding grounds for mosquitoes, rats and other vermin, generating amongst others; yellow fever, Lassa fever, and trachoma mortality in Nigeria. Isa, (2006) also concurred to the aforesaid claims when he elucidates that, a further canter through the Nigerian condition and a focus on refuse disposal and access to sanitary means of excreta disposal may not be in your menu of good taste. The litters that abound in the environment contain the admissible evidences. There is also a concern about those residues including the domestic wastes that may poison or damage the environment, adversely affecting species in the biosphere and destabilizing ecological balance. The modern Nigerian urban domestic waste is characterized by polythene materials, garbage, bottles, cans, papers

or foil wrappings and all throwaways of all sorts from the household. The volumes of these wastes are increasing greatly because of the constant desire of consumers to discard the old and acquire new items.
UNEPA, (2006) observed that wastes that are not managed properly, especially solid waste from households and the community, are a serious health hazard and lead to the spread of infectious diseases. The report further revealed that unattended wastes lying around attract flies, rats, and other creatures that, in turn, spread diseases. Normally, it is the wet waste that decomposes and releases a bad odor. The ever increasing consumption of resources results in huge amounts of solid wastes from industrial and domestic activities, which pose significant threats to human health (Foday, Xiangbin & Quangyen, 2013; Frosch, 1996). Health deterioration, accidents, flood occurrences, and environmental pressures are just a few of the consequences. However, the consequences of indiscriminate disposal of solid wastes are somewhat numerous to be cited. In many developing countries especially Nigeria, solid waste disposal sites are found on the outskirts of urban areas. These areas become children's sources of contamination due to the incubation and proliferation of flies, mosquitoes, and rodents.

They in turn, are disease transmitters that affect humans' health, which has its organic defences in a formative and creative state. The said situation produces gastrointestinal, dermatological, respiratory, genetic, and several other kind of infectious diseases (Foday et al., 2013; Salam, 2010).

Nguyen, Matsuri and Fujiwara (2011) unravelled that many cities in developing countries face serious environmental degradation and health risks due to the weakly developed municipal solid waste management system. This waste is ultimately thrown into municipal disposal sites and due to poor and ineffective management, the dumpsites turn to sources of environmental and health hazards to people living in the vicinity of such dumps. This waste causes pollution on land, water and air. Open dumpsites are a major problem to the environment especially to the air that we inhale as oxygen. Health care waste and other medical waste disposed in dumpsites, mixed with domestic waste, increasing the risk of infection with Hepatitis B and HIV, and other related diseases (World Bank, 2020). Dumpsites emit obnoxious odours and smoke that cause illness to people living in, around, or closer to them (Marshal, 1995).

In the views of Medina, (2002) pollution is seen as a major environmental effect of dumpsites, which is not directly transferred from land to people, except in the case of dusts and direct contact with toxic materials. Pollutants deposited on land usually enter the human body via the medium of contaminated crops, animals, food products, or water. In addition to the aforesaid, the dumpsites also have smelly conditions. These conditions are worse in the summer because of extreme temperatures, which speed up the rate of bacterial action on biodegradable organic material. With the numerous aforementioned consequences of indiscriminate disposal of solid waste in Nigeria, it is crystal clear to note that we have no other reason(s) for not adhering to the proper disposal of solid waste and management in order to avert the aftermath of the indiscriminate disposal of residential, industrial, commercial, agricultural and institutional wastes.

The group at risk from this unscientific disposal of solid waste includes-the population in areas where there is no proper waste disposal method, especially the pre-school children, waste workers and workers in facilities producing toxic and infectious materials. Other high-risk group includes population living close to the waste dump (Aatamila, Verkasalo, Korhonen, Viluksela, Pasanen, Tittanen & Nevalainen, 2010). In particular, organic domestic waste poses a serious threat, since they ferment, creating conditions favorable to the survival and growth of microbial pathogens. Direct handling of solid waste can result in various types of infectious and chronic diseases with the waste workers and rag pickers being the most vulnerable (Nwanta & Ezenduka, 2010). Studies conducted by Yongsi (2008) show that exposure to

hazardous waste in dumpsites can affect human health, children being the most vulnerable to these pollutants. Direct exposure can lead to diseases through chemical exposure as the release of chemical waste into the environment leads to chemical poisoning. Rushton (2003) in his studies to establish a connection between health and hazardous waste showed that waste from agriculture and industries can also cause serious health risks. Other than this, co-disposal of industrial waste with municipal waste can expose people to chemical and radioactive hazards. Gouveia & Ruscitto (2009) highlighted that in a number of health surveys a wide range of health problems, including respiratory systems, irritation of the skin, eyes and nose, gastrointestinal problems, psychological disorders, and allergies, have been discovered. In addition, dumpsites closer to residential areas are always feeding places for dogs and cats. These pets, together with rodents, carry diseases with them to nearby homesteads. In a study by Foday, *et al* (2013) where they examined the environmental and health impacts of households living around (nearby) and away (far away) from the Granville Brook dumpsite in Freetown, Sierra Leone. Results from the analysis of data revealed that both nearby residents and far away residents suffered from related diseases due to the location of the dumpsite closer to their settlements. It was discovered that residents less than fifty metres from the dumpsite are most affected by the dumpsite. Hence they were victims of malaria, chest pains, diarrhoea, and cholera, irritation of the skin, nose and eyes. This state of health of respondents in this study can be linked to pollution from the dumpsite. It was also noted that the extent of air and water pollution is worse in the raining season as a result of offensive and disease-carrying odour, as well as ground water pollution. In the dry season, the smoke from the incineration of the dumpsite is an important source of air pollution for people living far away from the dumpsite. They therefore complained about chest pains.

For example, in a study conducted in India researchers found that when citizens were exposed to open dumping and burning of waste they developed increased health problems due to the release of dangerous toxins such as dioxins, which are known to cause cancer and other health challenges. Important considerations must be made about the ways we manage waste not just to ensure the health of the environment, but to ensure our own health as well (Narayana, 2009).

Indiscriminate waste disposal leads to breeding of arthropod borne-diseases: Indiscriminate dumping of refuse promote the prolific breeding of arthropod-borne diseases like mosquitoes, houseflies, lice, tsetse flies, cockroaches which transmit diseases like malaria, viral encephalitis, typhoid, paratyphoid fever, diarrhoea, dysentery, cholera, gastro-enteritis, conjunctivitis, sleeping sickness, relapsing fever, scabies, enteric pathogens etc. (Park 2007). Andrew (2007) noted that natural water sources provide convenient reservoir for disease agents, whether in their developmental or adult forms, human industrial activities heavily pollute available water sources due to noxious and hazardous chemicals from industries. There is possibility of water pollution if rain water passes through deposits of fermented refuse to contaminate underground water table through leakage or there is a more serious aspect of water pollution caused by human activity such as indiscriminate sewage and refuse disposal which contain decomposable organic matter and pathogenic organisms. Man's health could be adversely affected by the ingestion of contaminated water either directly or through food and by the use of contaminated water for purpose of personal hygiene leading to water-borne diseases like diarrhoea and vomiting, hepatitis A, hepatitis E, poliomyelitis, typhoid and paratyphoid fever, bacillary dysentery, cholera, amoebiasis, worm infestations, schistosomiasis and Guinea worm or tape worm (Park 2007). Refuse dumps give rise to smug and air pollution when burnt openly. There is a risk-factor of air pollution in the event of accidental or spontaneous combustion of refuse.

Air pollution signifies the presence in the atmosphere of substances generated by the activities of man that

interfere with human health, safety or comfort. It is injurious to vegetation and animals and other environmental media, resulting in chemicals entering the food chain or being present in drinking water, causing health problems to man. Discharge of carbon monoxide by industries, domestic combustion of coal, wood or oil, open burning of refuse, incinerators, pesticide spraying, wind borne dust, fungi, moulds, bacteria and nuclear energy all contribute to air pollution (Ayodele 2007).

Also, Ajayi (2004) asserted that if an environment is polluted with filthy things like broken bottles, heaps of hazardous things, children and adults could receive injuries from the materials and if not quickly attended to, can lead to tetanus infection, which in turn, can kill the host. Heaps of refuse along motor parks or motor pathways can lead to road traffic accidents which could destroy lives and properties especially, when driving in the night and the driver is not aware of the heaps of refuse ahead.

Conclusion and Recommendations

This study provides an assessment on the implications of indiscriminate waste disposal on the health status of residents in Nasarawa State-Nigeria. Analysis based on the key factors, such as waste generation, waste disposal practices, waste collection and transportation, changing nature of waste etc. shows that the current solid waste management system (both existing and proposed) is unsustainable in the long run. The proposed system is an improvement upon the existing system and has much strength, but it does not address the whole issue. Waste management system as currently practiced is unsustainable in the long run. Waste is not segregated, and the collection and transportation of waste is basic and inadequate. Collection and transport methods are rudimentary and pose both human and environmental risk. Collection services were found to be infrequent and inadequate. The study has the followings recommendations:

i. There should be attitudinal change among residents in Nasarawa State towards waste disposal and compliance with environmental laws.

ii. Proper awareness and sensitization campaign should be carried out to educate the general public on the danger caused by indiscriminate waste disposal on human health status and the entire environment.

iii. Nasarawa state Government should put more effort to improve waste disposal management system by providing necessary facilities for house to house, street to street waste collection iv. Nasarawa state Government should key in with the agenda of Zero waste, whereby waste collected can be recycled for other purposes which can serve as revenue generation to the state and the country at large paradigm shift from linear Economy to circular economy'

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