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Assessment Of Practice Of Safety Measures Among Waste Collectors In Katsina State

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ABSTRACT
Safety among waste collectors can be guaranteed if Personal Protective Equipment (PPE) such as hand gloves, facemasks, safety boots, examination glove, are made available and used appropriately. Several evidences have shown how waste collectors are at a greater risk of contracting diseases and sustaining injuries. About 85% of waste collectors in developing countries including Nigeria do not have occupational health, safety and welfare which are aimed at providing protection for the collectors. This study was conducted using ex–post facto research design to assess practice of safety measures among waste collectors in Katsina state. A Multi-stage sampling technique that involves a stratified sampling, simple random sampling, proportionate sampling and systematic sampling technique was used for this study. The instrument for data collection was a close-ended structured questionnaire containing sections A, B, C and D with modified four point Likert rating format scale. The sample size for this study consisted of 400 respondents. The four hundred (400) copies of the questionnaire were distributed, out of which 390 (97.5%) were retrieved, valid and used for analysis. Ten (10), (2.5%) copies were not duly filled hence, were not used. Data collected was analyzed using descriptive statistics of frequencies and percentages to describe the demographic characteristics of the respondents while Means and standard deviations (SD) were used to answer the stated research questions. Inferential statistics of one sample t-test was used to test hypotheses 1, 2 and 3, while hypothesis 4 was tested using multiple regression analysis at 0.05 alpha level of significance. Hence, mean score of response was considered positive, if it was 2.5 and above and mean score of any response less than 2.5 was regarded as negative score.The findings of the study revealed that waste collectors in Katsina State practice of safety measures were not significant, (t=1.413; P=0.07). Based on the findings of the study, it was concluded that waste collectors have no significant practice of safety measures in Katsina State. It was therefore recommended that Waste Collectors in Katsina State should be encouraged by government and health agencies on how to improve practice of safety measures through training, seminars and workshop.
Keywords: Practice, Waste Collectors, Personal Protective Equipment

INTRODUCTION
Safety in all aspect of life ought to be a priority. This is especially important for waste collectors considering the fact that refuse or waste material whether it is solid, liquid or gas could be harmful to human health. Waste collection therefore must be done under extreme care and safety guide must be adhered to in order to prevent transmission or contracting diseases. Waste or rubbish, trash, junk, garbage is defined as an unwanted or out-of-use material or substance. Waste may consist of the unwanted materials left over from a manufacturing process (industrial, commercial, mining or agricultural operations) or from community and household activities. The material may be discarded or accumulated, stored, or treated (physically, chemically or biologically) before it is being discarded or recycled (Zurbrugg, 2013).

The increase in population and commercial activities has led to increase in the volume of waste generated daily in Katsina state. Other reasons for high volume of waste in the state include industrialization and influx of internally displaced persons into local government and state headquarters. The high population density translates to more demand for waste collection. Therefore waste collectors are further exposed to diseases and injuries associated with waste. The process of waste handling and collection in Katsina state is characterized by heavy weight lifting which affects major joints in the body as observed by the researcher.

Moreover, the practice among the waste collectors as observed by the researcher from daily interaction with waste collectors on streets of towns and state capital appeared to be unhealthy as bare hands are sometimes used to collect waste without the appropriate application of personal protective equipment.

The problem of Public waste in Katsina state cut across concerns for human health, air, water, and land pollution among others. Katsina state like many other urban centers is plagued with indiscriminate public waste management problems. Furthermore, there are diseases found to be common among the waste collectors include respiratory symptoms, irritation of the skin, nose and eyes, gastrointestinal problems, fatigue, headaches, psychological problems such as mood swings and allergies. It has been found that evaluation of a relationship between these symptoms is complicated by stress, public perception of risk, odours and nuisance related to the site. The term waste is also used to describe something that has been out of use. Waste can be regarded as a human concept as there appears to be no such thing as waste in nature (WHO, 2012). The waste products created by a natural process or organism quickly becomes the raw materials that feed other processes and organisms. Recycling is predominant, therefore production and decomposition are well balanced and nutrient cycles continuously support the next cycle of production. This is the so-called circle of life and it is a strategy clearly related to ensuring stability and sustainability in natural systems (Ogwueleka, 2012).

Access and correct application of Personal Protective Equipment (PPE) by waste collectors help in ensuring safety while at work. Several evidences have shown how waste collectors are at a greater risk of contracting diseases and sustaining injuries. About 85% of waste collectors in developing countries including Nigeria do not have occupational health, safety and welfare which are aimed at providing protection for the collectors. Generally, there are potential risks to human health from improper handling of wastes. These health risks can be broadly subdivided into direct and indirect effects (Harrison, 2013).

Ogwueleka, (2014) opined that public waste in Nigeria is a major responsibility of State and Local government environmental agencies. The agencies are charged with the responsibility of handling, employing and disposing of waste generated. The state agencies generate fund from subvention from state governments and internally generated revenue through public waste levies, but despite all the efforts and initiatives, the management of waste continues to pose different challenges. Managing waste in Nigeria is a problem due to many factors, including lack of adequate funding and increase population, lack of trained/ professional waste managers and lack of effective monitoring and control. Up till now, the activities of state environmental agencies have been hampered by poor funding, inadequate facilities and human resources, inappropriate resources and an inequitable taxation system. In Nigeria, the waste discharged for collection is seldom stored in closed containers and is dumped directly on the ground, requiring it to be shoveled by hand or left in an open carton or basket to be picked up by hand (Cointreau-Levine, 2016).

Waste Collectors, therefore, have significantly more direct contact with solid waste than their counterparts in developed countries, that predominantly handle sealed plastic bags and covered dustbins (Cointreau-Levine, 2016). In most developed countries, there has been little information on health and accident consequences among waste collectors, and in developing countries, it is almost non-existent. In developing countries, public waste work is overridden by the social, economic, and environmental deprivations, this is because, very often, environmental issues compete with other sectors of the economy for very limited resources available (Cointreau-Levine, 2016). Thus, management of solid waste end up not getting the priority it deserves. Also, the working conditions of waste collectors are often very poor, they may have no protective wears or equipment but few complain about the situation (Athanasiou,

Makrynos & Dounlas, 2010). In Nigeria, solid waste problem started with urban growth, resulting from national increase in population and more importantly from immigration. As such, waste management becomes as important as water and electricity or provision of other infrastructural facilities within the society (Ogadimma, 2012).

Katsina State is the third largest state in Nigeria with a population of over 7 million people. Out of this number, majority of the populace reside within the three senatorial zones namely Katsina north, Katsina south and Katsina central senatorial zones (Katsina State Ministry of Health, 2014). With increase in satellite towns and influx of people into the state on daily basis, one major problem confronting the metropolis is the issue of poor waste management. The fast-tracking development of Katsina state is beginning to show evidence especially in the area of quantity and quality of different types of wastes. Adamu, (2016) reported that about 377,126 tons of solid wastes were generated in Katsina state and most of these wastes go to roadsides, ditches, water bodies, empty plots of land, farms and uncompleted buildings. The Katsina State Ministry of Environment has mapped out over 111 designated dump sites for refuse disposal (Katsina State Environmental Protection Agency, 2015), nevertheless wastes generated in the state are deposited in the following ways; the first and most common practice within the slums, ghetto and sprawl neighborhoods of residential areas is the use of open ranges as refuse dump sites, these are carried out along the major routes, foot paths and pieces of undeveloped land or abandoned residential structure. The second method is, collection sites are owned among those living in the Government Reserved Areas where necessary town plan layout has been done but these collection sites are often located far away in the areas. Successful waste management in Nigeria will require a holistic program that will integrate all the technical, economic, social, cultural and psychological factors that are often ignored in solid waste management programs. The purpose of this study therefore is to assess the practice of safety measures among waste collectors in Katsina State.

MATERIALS AND METHODS

For the purpose of this research, ex–post facto research design was used. The population of the study consisted of waste collectors in Katsina State which is one thousand and fifty-nine (1,059), located across the three senatorial districts (Katsina State Environmental Protection Agency, 2018). The sample size for this study was 400. This was used in order to increase the representation of the population. To determine the sample size for the study, Research Advisor (2016), which says that a population within this range: 1059, a sample size of 400 suffices at a 5% margin of error and 95% confidence interval. A Multi-stage Sampling procedure that involves a Stratified Sampling, Simple Random Sampling, Proportionate Sampling and Systemic Sampling Technique was used for this study.

The first stage involved the use of stratified random sampling technique to identify the State into three (3), already existing senatorial zones, as strata namely Katsina North, Katsina Central and Katsina South. In the second stage, simple random sampling technique was used to select five (5) local government areas each per senatorial district by writing all the names of the local government areas in each senatorial district on the pieces of paper, folded and dropped them inside a container and shuffled, one research assistant was asked to pickone folded piece of paper containing the name of a particular local government area (LGA). The name of the LGA on the piece of paper was written down. This process was used until the required number of local governments was recorded. Third stage involved the use of proportionate sampling technique to obtain the number of respondents in each of the local government areas.

In the fourth stage, systematic sampling technique was used to select the respondents per local government through first come first serve method.

The instrument for data collection was researcher structured questionnaire. The questionnaire consisted of four (2) sections. Section A contained four (4) items on demographic Information of the respondents and Section B contains ten (10) items on safety practice among waste collectors. Thus, a total of fourteen (14) items constituted the questionnaire. Modified 4-point Likert Scale was used.

In order to ensure the face and content validity of the research instrument, the copies of researcher-structured questionnaire were submitted to four (4) professional experts in the field of Health Education

for vetting so as to ascertain its appropriateness, relevance and clarity. Their suggestions and corrections were incorporated and the final copy of the questionnaire was used for data collection. A letter of introduction was collected from the Department of Human Kinetics and Health Education, Faculty of Education, Ahmadu Bello University, Zaria by the researcher. On arrival to the Local Government Secretariat where the waste collectors report every morning, the researcher and his three (3) assistants made formal introduction to the Unit head in-charge of sanitation and waste management, sort to meet the waste collectors to explain the purpose of the visit. In each sampled local government area, the researcher and his research assistants administered the questionnaires by writing "Yes" or "No" on a piece of paper, folded and placed in a rubber basket. Each waste collector present was instructed to pick one piece of the folded paper. Any respondent that picked "Yes" was given the questionnaire to fill and submit back the filled questionnaire. This procedure was repeated in all the sampled Local Government Areas and four hundred (400) copies of the questionnaires were distributed in the sampled local governments across the three (3) senatorial zones of Katsina State. The process of data collection lasted for three weeks. Descriptive statistics of frequencies and percentages were used to describe the demographic characteristics of the respondents, while Mean and standard deviations (SD) were used to answer the stated research questions. One sample t-test was used to test the hypothesis. Hence, mean score of any response was considered positive, if it is 2.5 and above and mean score of any response less than 2.5 is regarded as negative score.

RESULTS

Research Question: *What is the practice of safety measures among waste collectors in Katsina State of Nigeria?*

Table 1: Mean scores of responses on the Practice of safety measures among waste collectors in Katsina State of Nigeria

S/N	Statement	Mean	Std. Dev.
1	I use safety hand gloves when working	2.18	1.090
2	I always use safety boots when working	2.29	1.108
3	I do wash my hands with soap and water after work	2.35	1.110
4	I always remove all jewelry (watches, bracelets, rings and earrings) before putting on safety equipment	2.28	1.105
5	I always use face shield when working	2.35	1.064
6	I always wear examination glove when working	2.23	1.014
7	I always wear safety plastic apron when working	2.41	1.040
8	I always read labels on containers of chemical	2.39	1.006
9	I always use face mask to cover my nose whenever am at work	2.27	1.007
10	I always make use of safety long sleeved shirt when working	2.37	1.076
		2.312	**1.062**

(Decision mean =2.50)

Table 1 above shows the mean scores of responses on practice of safety measures among waste collectors in Katsina State of Nigeria. The aggregate mean score for the table indicated that the respondents do not practice the safety measures (2.312<2.50). The benchmark mean set to determine the level of such practice is 2.50 as indicated at the bottom of the table. The aggregate mean score on practice of safety measures among waste collectors in Katsina State is 2.26 which is lower than the midpoint on the four-point scale. This observation implies that waste collectors in Katsina State do not always use personal protective equipment such as safety hand gloves ($\varkappa$ 2.18; SD 1.090), safety boots ($\varkappa$ 2.29; SD 1.108), examination globe ($\varkappa$ 2.23; SD 1.014), face mask ($\varkappa$ 2.27; SD 1.007) and safety long sleeved shirt ($\varkappa$ 2.37; SD 1.076) when working.

Table 2: One sample t-test analysis on practice of safety measures among waste collectors

	Mean	Std. Deviation	t-value	Df	P-value
Aggregate mean	2.31	1.062	1.413	399	0.07
Constant mean	2.50				

t (399) = 1.972, P < 0.05

Table 2 revealed that the Practice of safety measures among waste collectors is not significant. This is because the one-sample t-test calculated value is 1.413, less than the t-critical of 1.972 at degree of freedom 399 with probability value 0.07 which is greater than 0.05 level of significance. Thus, this result showed that the hypothesis which states that "The Practice of safety measures among waste collectors is not significant" is therefore retained because the hypothesis was found to be true as no significant practice of safety measures was found among waste collectors in Katsina State.

DISCUSSION

The Practice of safety measures among waste collectors is not significant. This is because the one-sample t-test calculated value is 1.413 less than the t-critical of 1.972 at degree of freedom 399 with probability value 0.07 which is greater than 0.05 level of significance. Thus, this result showed that the sub-hypothesis (null) which states that "The Practice of safety measures among waste collectors is not significant" is therefore retained. The waste collectors' responses indicated that majority of them do not always use face masks to cover their nose when at work, likewise they do not always use hand gloves as their safety equipment. This finding is in agreement with the findings of Sujan et al, (2017) on Knowledge of occupational health hazard and safety practices among municipal solid waste handlers of Kathmandu Metropolitan City in which poor use of personal protective equipment that would ensure safety practice was found. Similarly, Fikrom et. al., (2016) in their research titled Assessment of knowledge, attitude and practices among solid waste collectors in Lideta Sub-city on prevention of occupational health hazards, Addis Ababa, Ethiopia found that an insignificant percentage of respondents had safe practice on preventing occupational health hazards.

CONCLUSION

Based on the findings of the study, it can be concluded that waste collectors in Katsina state have poor practice of safety measures. Going further, the finding suggests that there is need for provision of personal protective equipment and training on the correct use of the equipment by the waste collectors. Finally, the researchers wish to acknowledge Tertiary Education Trust Fund for sponsoring this research effort.

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