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# PRACTICE OF REFUSE DISPOSAL METHODS AMONG RESIDENTS OF EMOHUA LOCAL GOVERNMENT AREA, RIVERS STATE

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**Abstract**

Unlawful refuse disposal methods are a problem across villages, communities, and towns where mountains tops of refuse are dumped on roadsides, dump sites not approved by the government, in drainages systems and open places, causing a lot of threats to the health of the public in general and on the surrounding environment. This study was carried out to obtain baseline information regarding the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State. The study adopted a descriptive cross-sectional survey in which 500 respondents were randomly selected from 7 communities within Emohua LGA. An adapted and revalidated questionnaire was used for the collection of data, and simple percentage, mean and standard deviation, independent sample t-test and a one-way ANOVA were used for data analysis. The result of the study showed that the respondents had good practice of refuse disposal methods (M=2.55, SD=0.36). Age was not a significant factor in the practice of refuse disposal methods among residents of Emohua LGA ($p>0.05$). While the level of education and occupation are statistically significant factors in the practice of refuse disposal methods among residents of Emohua LGA ($p<0.05$). In conclusion, this study revealed that the demographic profile of the residents has statistical significance differences in our various communities on the practice of refuse disposal methods hence residents' demographic profiles should be considered by health educators planning programmes on refuse disposal methods.

**Keywords:** Practice, refuse disposal methods, residents, demographic profiles

## Introduction

The concept of practice is one of the key concepts in refuse disposal methods. English Oxford Living Dictionary (2017) defined the practice as the usual or correct way in which something is been done by someone. Practice means rehearsing a behaviour often and on or doing something over and over to improve, master, enhance or attain perfection. Guillermo and Gobet (2011) reiterate that practice justifies expert performance which is qualitative and different from normal performance. Practice as it relates to refuse (solid waste materials like household garbage, piece of wood, organic matter from food, glass, personal care products vegetable peelings etc.) disposal methods encompasses storage methods, sorting, collection, transporting and disposal method (via community sanitary landfilling, composting, incineration, sea dumping burying, open burning, mechanical destructor and feeding of animals (Adogu et al., 2015), and recently scavenging.

Deductively, the consistent and continuous practice of proper refuse generation, collection, and disposal methods, instils a proper refuse disposal culture. This culture when adopted improves and promotes good health, freedom and well-being of the environment from degradation and pollution. Also, it helps to protect human from diseases like skin problem, typhoid fever, diarrhoea, hepatitis cholera, hookworm infestation, malaria, and respiratory diseases which affects the functionality of man in his environment (Kadafa, 2017). Unlawful disposal methods of refuse are a result of the poor practice of refuse disposal methods. This has been a major problem facing the world at large, especially in rural and urban centres of developing countries (increasing refuse or waste generation) of which the Emohua Local Government Area of Rivers State is not excluded. Agwu (2012) opined that about 10, 000 tons of refuse (mainly solid wastes) are generated worldwide every day, out of which about 50% are generated by the residents residing in Lagos, Port Harcourt and the Abuja area. In this same vein Abuja-Citiserve, (2014)

asserted that about 10, 000 tons of refuse (mainly solid wastes) are generated worldwide every day. Out of these about two-thirds of refuse are dumped improperly on the roadside and in the gutters thus causing serious health hazards to the environment and the public at large (Lawal, 2014). Improper refuse disposal methods lead to the degradation of the environment, health problems, social and economic hazard, and contamination of edible products, hence leading to an increase in the burden of diseases and sicknesses like diseases such as whooping cough, cholera, asthma, Lassa fever, tuberculosis, typhoid fever, measles, dysentery, hepatitis, malaria, plague and even death among the residents. In Emohua Local Government Area, residents indulge in poor practices of litter refuse around the environment, especially on the road and in water bodies, and this has caused a lot of hazards to human health, animals and the environment.

So many studies implicated practice to be a significant factor in refuse disposal methods based on demographic variables. For instance, the study of Laor (2017) noted a difference in the refuse disposal practice of residents based on age and level of education in a KAP study conducted. Twumasi (2017) conducted a study on the awareness and practice of solid waste management in the Winneba Municipality of Ghana., The study revealed that although the majority of people know about the strategies on how to manage solid waste, did not put them to practice. The study conducted by Kadafa (2017) indicated these demographic characteristics (age level of Education and occupation) significantly determined or influenced the solid waste management practice among residents of Abuja Municipalities in Nigeria. Ifegbesan (2010) in his study on awareness, knowledge and practices of secondary school students concerning waste management, found out that the propensity for waste management practices differs by age of students. Significant relationships were observed between students' age and their practices of waste management. Most studies in this area are normally case studies of a particular area or community, state or local government in Nigeria; this gave the impression that awareness as regards refuse generation, the management or handling and good refuse disposal methods in many other cities is not relatively known or is unnoticed. Against the background of these identified problems, this research is posed on the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State.

**Objectives of the Study**

The objectives of the study are to:

1. investigate the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers state.
2. examine the difference in the practice of refuse disposal methods among residents of Emohua LGA, Rivers State based on age, level of education and occupation.

**Research Questions:**

1. What is the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State?
2. What is the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State based on age, level of education and occupation?

**Hypotheses:**

There is no significant difference in the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers state based on age, level of education, and occupation.

**Methodology**

This study adopted the descriptive cross-sectional survey design. The population of the study consisted of all the residents or households in all 14 communities (via Emohua, Ogbakiri, Omuikpe, Egbeda, Elele Alimini, Rumuji, Ndele, Ibaa, Ubimini, Obelle, Rumuewor, Akpavum, Omudioga and Itu) in Emohua Local Government Area of Rivers State. Emohua L.G.A. has a population projection of about 282,500 as of 2016 (National Population Commission 2016; National Bureau of Statistics 2018) A sample of 500 respondents participated in the study. Michael Slovin's method of sample size calculation was used in drawing a sample size of 500 respondents from the projected population of 282,500 for Emohua Local Government Area. The multistage sampling technique was used in three phases which include simple random sampling, accidental sampling techniques and simple random sampling method again in the selection of the residents. In the first stage, a simple random sampling technique (using balloting) was used in the selection of 7 communities out of the 14 communities (which serve as the


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sampling frame) in the Emohua Local Government Area. The researcher picked 7 consecutive numbers (from the lot numbered 1-14) representing the communities in Emohua Local Government Area. The 7 selected communities include; Emohua, Ogbakiri, Elele Alimini, Rumuji, Ndele, Obelle and Itu.

In the second phase, a maximum of 87 and a minimum of 62 residents or households were drawn from each of the 7 selected communities using random and accidental sampling techniques. Nwankwo (2013) emphasized that the accidental sampling technique is the ideal sampling technique for a public opinion survey or study. In the third stage, a simple random sampling method was used in selecting the first resident or household in each community, afterwards, the researcher made another selection from among the residents or households that were available until all the households were finished. This constituted a sample of 500 residents or households that were selected across the 7 selected communities in the Emohua Local Government Area. Both primary and secondary sources of data were used for the study. The instrument for data collection was a questionnaire on the practice of refuse disposal made up of 16 items, adapted from Adeyemo et al. (2013) and it showed a reliability coefficient of 0.86 from the adapted point but when the instrument was retested again by the researcher using the test-retest method, PPMCC method of calculation gave a coefficient of 0.71. The instrument was validated using face and content validity. According to the specialists, this instrument covered all the areas of the subject being researched, therefore the instrument is valid for the study. The researcher applied the face-to-face direct delivery technique as the method of data collection to all the 500 respondents aided with the help of three (3) trained research assistants to ensure proper distribution and prompt collection of the KAPRDMQ instruments to and from the respondents at a fairly sufficient time. The data collected from the questionnaire survey were analyzed using the Statistical Package for Social Science (SPSS) version 22, Descriptive statistics simple percentages, mean and standard deviation were used to analyze the data. Independent sample t-test and ANOVA were used in testing the hypotheses at the significant level of 0.05.

**Results**

**Table 1: Summary of the distribution of demographic profiles of the study:**

| Variable | Category | N | % |
|---|---|---|---|
| Age | 18-22 | 84 | 17.2 |
| | 23-27 | 178 | 36.6 |
| | 28-32 | 158 | 32.4 |
| | 33 years and above | 67 | 13.8 |
| Education | Primary | 61 | 12.5 |
| | Secondary | 227 | 46.6 |
| | Tertiary | 122 | 25.1 |
| | Non-formal education | 77 | 15.8 |
| Occupation | Students | 67 | 13.8 |
| | Civil servant | 169 | 34.7 |
| | Business | 164 | 33.7 |
| | Farmer | 87 | 17.9 |

The result from Table 1, showed a summary of the distribution of demographic profiles of the respondents. It showed that the majority, 178(36.6%) of the respondents were within the age bracket of 23-27. This was followed by those in the age bracket of 28-32 years, 158(32.4%), then those in the age bracket of 18-22years, 84(17.2%) and the least were those in the age bracket of 33 years and above, 67(13.8%). The result showed that respondents, 227(46.6%) had secondary education whereas 122(25.1%) had tertiary education and 61(12.5%) had primary education among others. The result showed that respondents, 164(33.7%) were into business whereas 169(34.7%) were civil servants and 87(17.9%) were farmers among their counterparts.


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**Table 2: Mean and standard deviation on the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State.**

| SN | | Mean | SD | Decision |
|---|---|---|---|---|
| 1 | Store your refuse in cardboard and an old box. | 2.44 | 1.15 | |
| 2 | Covered refuse bin and bag to avoid flies perching on them and to avoid offensive smells around the house. | 3.07 | 0.97 | * |
| 3 | Throw your refuse into farmlands and bushes. | 2.84 | 1.10 | * |
| 4 | Throw your refuse on the streets, roadside, open spaces and backyards. | 2.75 | 1.14 | * |
| 5 | Dump your refuse into the lake, sea, river, gutter or drains. | 2.61 | 1.07 | * |
| 6 | Discard your refuse into an abandoned burrow pit and community sanitary landfill/ site. | 2.87 | 1.01 | * |
| 7 | Feed your animals with some of your households refuse. | 2.34 | 1.13 | |
| 8 | Burry your household refuse in the ground | 2.41 | 1.11 | |
| 9 | Dump your household refuse on the heaps of mountains of garbage on highways. | 2.83 | 1.08 | * |
| 10 | Discard refuse in marketplaces. | 2.37 | 0.96 | |
| 11 | Defecate on the streets/marketplaces/ open places. | 2.30 | 1.00 | |
| 12 | Discard animal dropping/poultry remains on the streets. | 2.20 | 1.03 | |
| 13 | Discard baby's diaper with excrement on the streets. | 2.16 | 1.08 | |
| 14 | Separate /segregate your household refuse before disposing of them. | 2.36 | 1.07 | |
| 15 | Reuse some of your items instead of discarding them away. | 2.62 | 1.10 | * |
| 16 | Make use of a wheelbarrow/ truck in moving your household refuse to the dump site. | 2.80 | 1.07 | * |
| 17 | Employ the service of refuse collectors in collecting and moving my refuse to the dump site. | 2.42 | 1.13 | |
| | **Grand mean** | **2.55** | **0.36** | * |

The result from Table 2 showed that the respondents had good practice of refuse disposal methods (grand mean score, M=2.55, SD=0.36). The result also showed that the respondents strongly indicated that they cover refuse bins and bags to avoid flies perching on them and to avoid offensive smells around the house (M=3.07, SD=0.97). This was followed by the fact that respondents discard their refuse into abandoned burrow pits and community sanitary landfill/sites (M=2.87, SD=1.01). Also, the respondents indicated that they throw their refuse on the streets, roadside, open spaces and backyards (M=2.84, SD=1, 10) and respondents indicated that they reuse some of their items instead of discarding them away (M=2.62, SD=1.10)


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**Table 3: Summary of the descriptive statistic of the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State based on age.**

| | | 18-22, n=84 | | 23-27, n=178 | | 28-32, n=158 | | 33 and above, n=64 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SN** | **Practice items and age of the residents** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Decision** |
| 13 | Cardboard and old box. | 2.62 | 1.13 | 2.56 | 1.14 | 2.21 | 1.17 | 2.43 | 1.08 | |
| 14 | Covered refuse bin and bags. | 2.88 | 1.02 | 3.02 | 0.99 | 3.18 | 0.92 | 3.13 | 0.97 | * |
| 15 | Farmlands and bushes | 2.54 | 1.12 | 2.88 | 1.11 | 2.96 | 1.03 | 2.81 | 1.17 | * |
| 16 | Streets, roadside, open space and backyards | 2.63 | 1.18 | 2.87 | 1.13 | 2.77 | 1.13 | 2.54 | 1.11 | * |
| 17 | Lake, sea, river, gutter or drains. | 2.55 | 1.06 | 2.67 | 1.03 | 2.57 | 1.07 | 2.61 | 1.18 | * |
| 18 | Abandoned burrow pit and community sanitary landfill/ site. | 2.6 | 1.01 | 2.84 | 0.95 | 2.95 | 1.03 | 3.1 | 1.05 | * |
| 19 | Feeding for animals | 2.31 | 1.14 | 2.4 | 1.16 | 2.24 | 1.1 | 2.46 | 1.12 | |
| 20 | Burry refuse on the ground | 2.36 | 1.08 | 2.38 | 1.09 | 2.47 | 1.09 | 2.42 | 1.23 | |
| 21 | Dump refuse on heaps of mountains of garbage on highways. | 2.64 | 1.16 | 2.83 | 1.02 | 2.85 | 1.12 | 3 | 1.04 | * |
| 22 | Market places. | 2.33 | 0.96 | 2.39 | 0.99 | 2.41 | 0.98 | 2.3 | 0.84 | |
| 23 | Streets/marketplaces/ open places | 2.26 | 1.03 | 2.44 | 1 | 2.19 | 1 | 2.21 | 0.93 | |
| 24 | Discard animal dropping and poultry remains on the street | 2.13 | 1.07 | 2.35 | 1.01 | 2.2 | 1.06 | 1.87 | 0.94 | |
| 25 | Discard the baby's diaper with excrement on the streets. | 2.14 | 1.1 | 2.32 | 1.1 | 2.14 | 1.08 | 1.78 | 0.93 | |
| 26 | Separate /segregate refuse | 2.4 | 1.18 | 2.44 | 1.02 | 2.34 | 1.09 | 2.15 | 0.99 | |
| 27 | Reuse items | 2.7 | 1.03 | 2.51 | 1.09 | 2.69 | 1.13 | 2.61 | 1.11 | * |
| 28 | use of wheelbarrow/ truck in moving refuse to dumpsite | 2.65 | 1.09 | 2.75 | 1.06 | 2.85 | 1.08 | 2.99 | 0.99 | * |
| 29 | Employ the service of refuse collectors. | 2.51 | 1.14 | 2.5 | 1.04 | 2.42 | 1.21 | 2.07 | 1.11 | |
| | Grand mean | **2.49** | **1.09** | **2.6** | **1.06** | **2.55** | **1.08** | **2.5** | **1.05** | |

The result from Table 3, showed that respondents between the age group of 28-32years (M=3.18, SD=0.92) practice more covering of refuse bins and bags to avoid flies perching on them and avoiding offensive smells around the house, followed by respondents aged 33 and above and then by respondents aged 23-37 among other of their counters parts. The result also indicated that those residents aged 28-32years (M=2.96, SD=1.03) did more throwing their refuse into farmland and bushes, followed by the respondents aged 23-27years (M=2.88, SD=1.11) than other of their counterparts. It showed that the grand mean practice score of the residents in the age bracket of 23-27 years was (M=2.60, SD=1.06), the grand mean practice score of


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respondents in the age bracket of 28-32 years was (M= 2.55, SD=1.08) whereas the grand mean practice score of respondents in the age bracket of 33 and above years was (M=2.50, SD=1.05) and then grand mean practice score of respondents in the age bracket of 33 and above was (M=2.49, SD=1.09). Furthermore, the grand mean score of (M=2.60, SD=1.06) showed that the respondents between the age group of 23-27 years did a better practice of refuse disposal methods in Emohua local government area, Rivers state.

**Table: 4. Summary of descriptive statistics of the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State based on level of education.**

| | **Item** | **primary, n=61** | | **Secondary, n=227** | | **Tertiary, n=122** | | **Non-formal, n=77** | | **Decision** |
|---|---|---|---|---|---|---|---|---|---|---|
| SN | **items** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | |
| 13 | Cardboard and old box. | 2.43 | 1.18 | 2.43 | 1.17 | 2.45 | 1.17 | 2.45 | 1.03 | |
| 14 | Covered refuse bin and bags. | 3.31 | 0.83 | 3.01 | 1.05 | 3.12 | 0.89 | 2.95 | 0.96 | * |
| 15 | Farmlands and bushes | 3.02 | 1.07 | 2.86 | 1.08 | 2.66 | 1.19 | 2.91 | 1.04 | * |
| 16 | Streets, roadside, open space and backyards | 2.74 | 1.06 | 2.79 | 1.1 | 2.69 | 1.18 | 2.73 | 1.24 | * |
| 17 | Lake, sea, river, gutter or drains. | 2.75 | 1.04 | 2.52 | 1.01 | 2.61 | 1.14 | 2.75 | 1.14 | * |
| 18 | Abandoned burrow pit and community sanitary landfill/ site. | 3.07 | 0.98 | 2.79 | 0.96 | 2.84 | 1.13 | 2.97 | 0.95 | * |
| 19 | Feeding for animals | 2.28 | 1.14 | 2.37 | 1.12 | 2.27 | 1.16 | 2.44 | 1.12 | |
| 20 | Burry refuse on the ground | 2.28 | 1.1 | 2.42 | 1.08 | 2.37 | 1.19 | 2.56 | 1.08 | |
| 21 | Dump refuse on heaps of mountains of garbage on highways. | 2.82 | 1.09 | 2.83 | 1.07 | 2.88 | 1.08 | 2.74 | 1.14 | * |
| 22 | Market places. | 2.31 | 0.96 | 2.42 | 1.02 | 2.34 | 0.93 | 2.32 | 0.82 | |
| 23 | Streets/marketplaces/ open places | 2.38 | 1.05 | 2.43 | 1.05 | 2.11 | 0.89 | 2.14 | 0.91 | |
| 24 | Discard animal dropping and poultry remains on the street | 2.08 | 0.97 | 2.4 | 1.07 | 1.94 | 0.94 | 2.08 | 1.04 | |
| 25 | Discard the baby's diaper with excrement on the streets. | 2.11 | 1.03 | 2.33 | 1.13 | 2.03 | 1.04 | 1.88 | 0.97 | |
| 26 | Separate /segregate refuse | 2.31 | 1.16 | 2.55 | 1.06 | 2.18 | 1.03 | 2.14 | 1.01 | |
| 27 | Reuse items | 3.11 | 0.93 | 2.61 | 1.08 | 2.43 | 1.09 | 2.52 | 1.15 | * |
| 28 | use of wheelbarrow/ truck in moving refuse to dumpsite | 3.02 | 1.04 | 2.76 | 1.07 | 2.8 | 1.09 | 2.71 | 1.05 | * |
| 29 | Employ the service of refuse collectors. | 2.25 | 1.15 | 2.61 | 1.09 | 2.31 | 1.11 | 2.16 | 1.18 | |
| | **Grand mean** | **2.6** | **1.05** | **2.6** | **1.07** | **2.47** | **1.07** | **2.5** | **1.05** | * |

The result from Table 4, showed that the grand mean practice score of the residents who had primary education was (M=2.60, SD=1.06). The mean practice score of respondents who had secondary education was (M=2.60, SD=1.07) whereas the mean practice score of respondents who had tertiary education was (M=2.47, SD=1.07) and the mean practice score of respondents who had non-formal education was


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(M=2.50, SD=1.50). Furthermore, the result showed that the residents who had a primary level of education did more practice in Emohua local government area, Rivers state (M=2.60, SD=1.05).

**Table 5: summary of the descriptive statistic of the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area, Rivers State based on occupation.**

| | **Occupation** | **Students, n=67** | | **Civil servants, 169** | | **Business, n=164** | | **Farmer, n=87** | | **Decision** |
|---|---|---|---|---|---|---|---|---|---|---|
| SN | **items** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | |
| 13 | Cardboard and old box. | 2.57 | 1.12 | 2.33 | 1.25 | 2.48 | 1.1 | 2.48 | 1.06 | |
| 14 | Covered refuse bin and bags. | 3.07 | 0.88 | 3.28 | 0.91 | 2.87 | 1.03 | 3.01 | 1.01 | * |
| 15 | Farmlands and bushes | 2.4 | 1.07 | 2.96 | 1.1 | 2.79 | 1.12 | 3.01 | 1.03 | * |
| 16 | Streets, roadside, open space and backyards | 2.63 | 1.14 | 2.85 | 1.1 | 2.69 | 1.15 | 2.76 | 1.18 | * |
| 17 | Lake, sea, river, gutter or drains. | 2.61 | 1.04 | 2.59 | 1.04 | 2.63 | 1.11 | 2.61 | 1.09 | * |
| 18 | Abandoned burrow pit and community sanitary landfill/ site. | 2.72 | 0.92 | 2.9 | 1.02 | 2.76 | 1.04 | 3.13 | 0.96 | * |
| 19 | Feeding for animals | 2.43 | 1.18 | 2.33 | 1.15 | 2.28 | 1.08 | 2.41 | 1.18 | |
| 20 | Burry refuse on the ground | 2.43 | 1.16 | 2.47 | 1.14 | 2.31 | 1.05 | 2.47 | 1.12 | |
| 21 | Dump refuse on heaps of mountains of garbage on highways. | 2.55 | 1.17 | 2.98 | 1.05 | 2.73 | 1.04 | 2.93 | 1.12 | * |
| 22 | Market places. | 2.24 | 0.97 | 2.43 | 1.02 | 2.32 | 0.92 | 2.47 | 0.91 | |
| 23 | Streets/marketplaces/ open places | 2.1 | 0.96 | 2.4 | 1.02 | 2.34 | 1.01 | 2.17 | 0.94 | |
| 24 | Discard animal dropping and poultry remains on the street | 2.13 | 0.97 | 2.34 | 1.16 | 2.19 | 0.95 | 1.97 | 0.95 | |
| 25 | Discard the baby's diaper with excrement on the streets. | 1.96 | 0.89 | 2.28 | 1.18 | 2.22 | 1.05 | 1.94 | 1.04 | |
| 26 | Separate /segregate refuse | 2.27 | 1.15 | 2.43 | 1.14 | 2.38 | 1.02 | 2.28 | 0.96 | |
| 27 | Reuse items | 2.64 | 0.96 | 2.72 | 1.1 | 2.51 | 1.12 | 2.61 | 1.12 | * |
| 28 | use of wheelbarrow/ truck in moving refuse to dumpsite | 2.72 | 1.1 | 2.79 | 1.07 | 2.83 | 1.06 | 2.8 | 1.07 | * |
| 29 | Employ the service of refuse collectors. | 2.46 | 1.08 | 2.6 | 1.12 | 2.45 | 1.1 | 1.97 | 1.13 | |
| | **Grand mean** | **2.47** | **1.04** | **2.63** | **1.09** | **2.52** | **1.06** | **2.53** | **1.05** | * |

The result from Table 5., showed the difference in the practice of refuse disposal methods based on occupation. The result revealed that civil servants (M= 2.63, SD=1.09) had good practices of refuse disposal followed by farmers (M= 2.63, SD=1.09) and businessmen (M= 2.52, SD=1.06) while students had poor (M=2.47, SD=1.04) disposal practice.


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**Table 6: Summary of a one-way ANOVA on the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State, based on age.**

| Source | Sum of Squares | df | Mean Square | F | p-value | Decision |
|---|---|---|---|---|---|---|
| Between Groups | .919 | 3 | .306 | 2.420 | .065 | H01, Retained |
| Within Groups | 61.164 | 483 | .127 | | | |
| Total | 62.083 | 486 | | | | |

The null hypothesis states that there is no significant difference in the practice of refuse disposal methods among residents of the Emohua local government area. The result in Table 6 showed that there is no significant difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State based on age (F3, 483=2.420, p>0.05). The null hypothesis 1 was therefore not rejected.

**Table 7: Summary of a one-way ANOVA on the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State based on level of education.**

| Source | Sum of Squares | df | Mean Square | F | p-value | Decision |
|---|---|---|---|---|---|---|
| Between Groups | 1.553 | 3 | .518 | 4.130 | .007 | H02, Rejected |
| Within Groups | 60.531 | 483 | .125 | | | |
| Total | 62.083 | 486 | | | | |

The ANOVA result in Table 7 showed that there is a significant difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State, based on level of education (F3, 483=4.130, p<.0.05). The null hypothesis 2 was rejected at the 0 .05 alpha level. The significant result was subjected to Scheffe's post hoc test of multiple comparisons on the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State, based on level of education. It shows that the mean difference in the refuse disposal practice between those who had secondary education and those who had tertiary education was significant in favour of those who had secondary education (M=3.032, p<0.05). The other pairs did not reach statistical significance over the difference in mean practices.

**Table 8: Summary of a one-way ANOVA on the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State of based on occupation.**

| Source | Sum of Squares | df | Mean Square | F | p-value | Decision |
|---|---|---|---|---|---|---|
| Between Groups | 1.715 | 3 | .572 | 4.573 | .004 | H03, Rejected |
| Within Groups | 60.369 | 483 | .125 | | | |
| Total | 62.083 | 486 | | | | |

Table 8, showed that there is a significant difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State, based on occupation (ANOVA result in F3, 483=4.573, p<.05). The null hypothesis 3 was rejected at 0.05 alpha level. Table 8 summary of Scheffe's posthoc test of multiple comparisons on the difference in the practice of refuse disposal methods among residents of Emohua Local Government Area Rivers State, based on occupation, shows that the mean difference between the refuse disposal practice of students and civil servants was significant (M=4.03, p< .05) and in favour of civil servants. It also


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showed that the refuse disposal practices between civil servants and residents in business were significant (M=2.81, p< .05) and in favour of civil servants. Other pairs were not significant at the .05 alpha level.

**Discussion**

The result showed the demographic characteristics of the respondents. The average age of the respondents was 18 years. Most of the respondents surveyed are between the age bracket of 23-27 years (178,36.6%). 227 respondents (46,6%) had secondary education. 169 respondents (17.5%) were civil servants. The overall findings of the study showed that respondents had good practice of refuse disposal methods (M=2.55, SD=0.36). This implies that respondents in the study area are aware of good refuse disposal methods and practice them. This finding was supported by Laor (2017) who found out that about 59% of his respondents showed good practice in refuse management. Also, Barloa et al. (2016) gave support to the present study by revealing that less than half of their respondents showed a satisfactory practice level in their study. On the contrary, Adogu et al. (2015) found a poor practice level among respondents in their study area. Twumasi (2017) contradicted this present study by indicating that the majority of people who were aware of refuse disposal strategies did not put them to practice in his study area. Still on the contrary Kiran et al., (2015) found that household waste disposal practice in their study area was found to be unsatisfactory as 78 households disposed of household waste by just throwing away outside the house. Even though respondents perform good practices in the study area, there is still a need to create awareness among the general public on the consequences of poor refuse disposal methods irrespective of the finding of this present study.

The respondents between the age group of 23-27 years (M=2.60, SD=1.06) did a better practice of refuse disposal methods in the Emohua local government area, Rivers state. The study of Llevbare (2015) in support of this current finding, showed that there was no significant influence of age on refuse disposal practice. Ifegbesan (2010) found that a significant relationship existed between students' age and their practice of refuse disposal. The mean plot that the residents who had a primary level of education did more practice in the Emohua local government area, Rivers state (M=2.610). this finding could be because domestic household activities of refuse disposal are mostly seen as the duty of the young ones in the family. When the duty of refuse disposal is left in the hands of young ones, there is a very tendency that the environment will be littered with refuse, thereby causing hazards to human health, animal and the environment. Also, the results of the study revealed that (M= 2.75, SD=104) of respondents who had a primary level of education indicated that they dump their refuse into the lake, sea, river, gutter or drains. This means that the lower the educational level someone has, the poorer his or her practices of refuse disposal methods. Modebe et al. (2011), in collaboration with this current finding of the study, found out that respondents in his study area dumped their refuse in unauthorized areas. Jatau (2013) contrary to this current finding, noted that Both TCII/SSCE and NCE/B.Ed. holders exhibit positive practices associated with refuse disposal methods.

The civil servant (M=2.63, SD=1.09) did a better practice of refuse disposal in the Emohua Local Government area, Rivers State. this could be because the civil servant is a public figure and may likely want to maintain cleanliness at all times, thereby preventing contracting illness and diseases that may result from an unclean environment. Furthermore, the result showed that civil servants (M=3.28, SD=0.91) practice more covering bins and bags of refuse. This implies that civil servants detest living in an environment that may be hazardous to their health. The study by Ramos and Pecajas (2016) noted that the majority of the respondents stored their waste in containers with covers. The study by Ebiwari and Mfrekemfon (2014) contrary to this current finding, concluded that waste generated in the two informal settlements was not properly stored. Ayodeji (2012) in his findings, contradicted this current finding by indicating that teachers as civil servants possessed negative waste management practices.

The result showed that there is no significant difference in the practice of refuse disposal methods among residents of Emohua L.G.A., Rivers State, based on age (F3,483=2,420, p> 0.05). This finding showed that the propensity for refuse disposal practice does not differ by age of the residents. This implies that age does not have a significant difference in the practice of refuse disposal methods. This means that both old and young are meant to practice good refuse disposal methods and keep the environment clean, thereby preventing environmental hazards. The study of Llevbare (2015) in support of this current finding, showed that there was no significant influence of age on waste disposal behaviour. The study conducted by Kadafa (2017) on the contrary, indicated that age significantly determined or influenced refuse disposal practices among residents of Abuja Municipalities in

Nigeria. Still, on the contrary, Ifegbesan (2010) found that a significant relationship existed between students' age and their practice of refuse disposal. This current study differs from the previous study in that sense age is not a determinant factor in the study area, both old and young are culturally expected to carry out the duty of good practice of refuse disposal methods.

The result showed that there is a significant difference in the practice of refuse disposal methods among residents of Emohua L.G.A., Rivers State, based on level of education (F3, 483=4.130, $p<0.05$). this means that residents who are well exposed and attain a higher level of education have acquired good skills on how to practice good refuse disposal methods, while those residents that have attained a low level of education have little skills on how to practice good refuse disposal methods. The finding suggests that the mean scores of the four educational level categories do vary significantly from one another. In addition, the post hoc test of multiple comparisons on the difference in the practice of refuse disposal methods among residents of Emohua LGA based on level of education showed that the mean difference in the refuse disposal practice between those who had secondary education and those who had tertiary education was significant in favour of those who had secondary education (M=3.032, $P<0.05$) while the other pair did not reach statistical significance over the difference in mean practices. This finding received support from the study of Adogu et al. (2015) who found that educational status significantly influenced the practice of waste management. Banga (2013) also gave support to this current study by indicating that the educational level of the households influences their practice of recycling activities. The findings of Ilevbare (2015) contradicted this current finding by revealing that there was no influence of education on waste disposal behaviour. This implies that education is a determinant in refuse disposal and should curb.

The hypothesis stated that there is no significant difference in the practice of refuse disposal methods among residents of Emohua L.G.A., Rivers State based on occupation, was not confirmed in the findings of this study. The result revealed that there is a significant difference in the practice of refuse disposal methods among residents of Emohua L.G.A., Rivers State, based on occupation (F3, 4.573, $P<0.05$). This implies that the mean scores of the four occupational groups do vary significantly from one another. The outcome of these current findings may be due to environmental influences. This means that residents or respondents practice refusing disposal method based on the type of occupation they find themselves in, for instance, respondents who do office work practices good refuse disposal methods than those respondents who sell in the market places and those who work in mother parks. This implies that occupation is determined to have good refuse disposal methods.

In addition, the post hoc test of multiple comparisons of the difference in the practice of refuse disposal methods among residents of Emohua LAG, Rivers State based on occupation as seen from the appendix, showed that the mean difference between the refuse disposal practice of students and civil servants was significant (M= 4.03, $p<0.05$) and in favour of civil servants. This could be because civil servants are a public figure who is expected to maintain cleanliness in their work environment or offices. Others also differ significantly. This finding was supported by Babaei et al. (2015) who found out that occupation was a significant factor affecting residents' refuse disposal practice. Also, Gholamreza et al. (2015) discovered that occupation was a significant factor in the practice of solid waste management. This implies that occupation is a determinant in the practice of refuse disposal methods.

**Conclusion**

Based on the findings of the study, it could be deduced that the residents in the study area performed good practices of refuse disposal methods. It could also be deduced that the age of the residents was not a significant factor in refuse disposal practice in Emohua LGA. The level of education and occupation of the residents were significant factors in the practice of refuse disposal methods among residents of Emohua LGA.

**Recommendations**

Based on the findings of the study, the following recommendations were raised by the researcher:

1. The Ministry of health and environment should create environmental awareness and implementation of policies for refuse management, in both urban and rural communities.
2. The government sectors should implement actionable guidelines/laws regarding refuse disposal methods, this is to make sure that refuse is not dumped into rivers, markets and parks, streets gutters drains, open spaces and buildings.


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3. Government should encourage each household to have to refuse bins in their homes, to avoid littering dirt around the environment.
4. Health educators, planning a health programme for residents of a community, should be put into consideration all socio-demographic profiles of the residents which are factors in refuse disposal knowledge level and practice.

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