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Plastic Bag Usage, Inappropriate Disposal and Its Environmental Impacts in Ilorin, Kwara State, Nigeria

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ABSTRACT: Plastic bag usage and inappropriate disposal have become serious environmental issues, especially in developing nations with sometimes insufficient waste management infrastructure. Hence, the objective of this paper is to survey the plastic bag usage, inappropriate disposal and its environmental impacts in Ilorin, Kwara state, Nigeria by collecting primary data with 100 an online questionnaire. The results were then analyzed and displayed in graphical formats, such as pie charts. According to the poll, 76% of participants said they preferred using plastic bags, and 69% said they used them occasionally. Burning (45%) and open dumping (47%), two disposal techniques that greatly increase environmental contamination, were used. Additionally, 92% of respondents said they were aware of the negative environmental effects of disposing of plastic bags. The findings show that Ilorin has a significant reliance on plastic bags, and that inadequate waste management methods are causing environmental deterioration. The study discovered that although most people are aware of the harm plastic trash does to the ecosystem, inappropriate disposal practices are nevertheless common.

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Globally, the pervasive use of plastic bags has emerged as a major environmental concern (Rensburg *et al.*, 2020; Iroegbu *et al.*, 2021). Plastic bags are a typical convenience item in retail and other businesses (Hussain *et al.*, 2020; Walker *et al*; 2023). They are affordable and multipurpose, but they have a negative impact on the environment (Kumar *et al*., 2021; Kibria *et al.*, 2023). They are not biodegradable, taking hundreds of years to break down, and when disposed of inappropriately, they cause pollution, harm to wildlife, and ecosystem deterioration, among other environmental issues (Evode *et al.*, 2021; Siddiqua *et al*., 2022).

Plastic garbage has become a major environmental concern in many urban areas, especially in developing countries like Nigeria, because of its extensive use and inadequate waste management techniques (Abubakar, 2023; Donuma *et al*., 2024).
The study centers on the Nigerian city of Ilorin and its environs, which are increasingly confronted with environmental problems due to plastic trash,

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particularly plastic bags. In addition to identifying important environmental and social issues, the field survey seeks to determine the local impact and the efficacy of current waste management practices in addressing the pollution caused by plastic bags. The environmental effects of plastic bags have been extensively studied worldwide (Ipeama *et al*., 2019; Walker *et al*., 2023), but there is a noticeable dearth of localized research in Nigeria, particularly with regard to smaller cities and their environs, such as Ilorin. The majority of current research frequently ignores regional variations in environmental practices and concerns because it concentrates on larger urban areas or takes a national viewpoint (Valavanidis, 2024). Furthermore, little is known about the precise environmental, social, and economic elements influencing how Ilorin communities deal with and react to the pollution caused by plastic bags. Consequently, the objective of this paper is to survey the plastic bag usage, inappropriate disposal and its environmental impacts Ilorin, Kwara State, Nigeria.

MATERIALS AND METHODS

Research Instrument for Data Collection: The questionnaire was designed on a Google form and it contained 4 sections with the total of
41 questions.
Section A: background information about respondents (1 – 5 Questions)
Section B: knowledge of citizen on the use of plastic bags (1 – 3 Questions)
Section C: perception of citizen on controlling the pollution generated from plastic bags (2 Questions)
All questions were marked as compulsory and the purpose of conducting the survey was stated. The questionnaire was totally anonymous because I could sense that people are usually afraid to fill their details online, so it was made confidential in order to retain the respondent interest. Again, each question was made easy and short for easy understanding.

Data collection: The data collection process followed the methodology outlined by Banjo *et al.* (2021). This research employed the use of primary data gathered from the willing respondent. Primary data was collected from people of Ilorin, Kwara State Nigeria through the use of an online questionnaire survey which was opened for a week. The data were represented in pie chart using Microsoft excel.

RESULTS AND DISCUSSION

This section presents the results collected from administering the questionnaire to the respondents. It is the section on background information of the citizen, knowledge of citizen on the use of plastic, and the perception of citizen on controlling the pollution of waste plastic bag. Data were thoroughly analyzed and discussed, and then each response are represented on pie chart. Fig.1 is the pie chart which represents the gender distribution of 100 respondents in a survey.

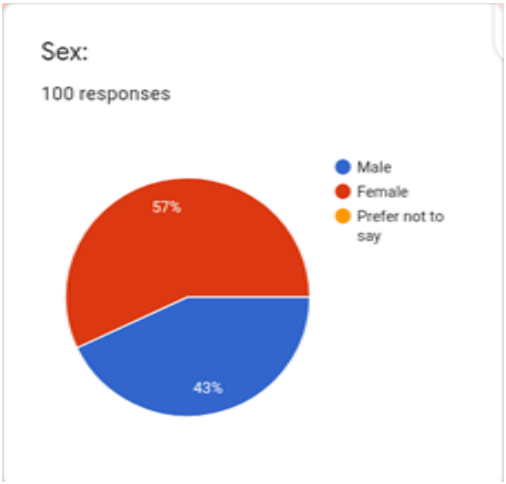

Fig.1: Sex of the respondent

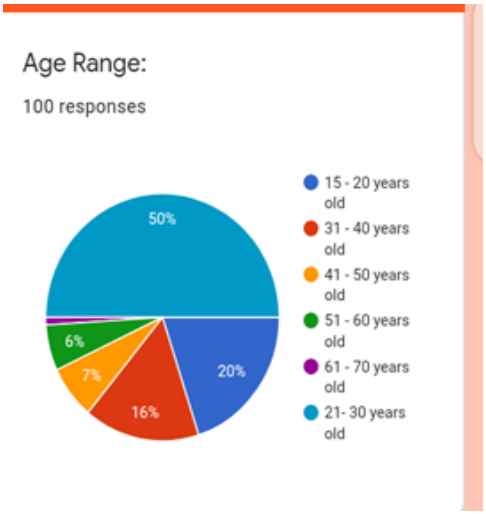

Fig.2: Age range of the respondent

Male respondents make up 43% of the total while the female respondents accounts for 57%.This chart shows that the majority of respondents in the survey are female (57%), while a slightly smaller proportion (43%) are male. The chart is evenly split between these two categories. Fig. 2 shows that the minority (20%) of respondents are between 15-20 years old, with the 21-30 years old group being the most represented (50%). Older age groups (above 40 years) are less represented, especially those aged 61-70, who make up just 1% of the survey population. Fig.3 illustrates the occupational distribution of 100 respondents in the survey, divided into various job

categories. Student represented the largest group, comprising 62% of the respondents. Most of the people who took the survey are students. Civil Servant represents 16% of the respondents; civil servants form the second-largest category.

Fig. 3: Occupation of the respondents

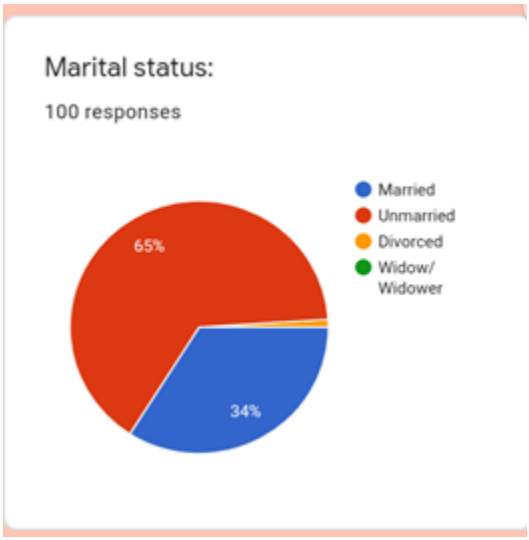

Fig. 4: Marital Status of the respondents

Traders constitute 11% of the respondent which represents a moderate-sized group in the survey. Other Occupations are several smaller categories such as Teacher which is a small group, not explicitly labeled with a percentage but visible on the chart. Similarly, a small portion of respondents fall into the category of engineers. Youth corp member, also a minor group as well as graduates which is also a smaller, less-represented group and Unemployed group is present but quite small, as indicated by the tiny section of the chart. Fig.4 shows the marital status of the 100 respondent. People with marital status had 34 % while unmarried was 65%. Fig.5 illustrates the citizenship status of the respondent. Citizens were 83% while non-citizen were 17%.

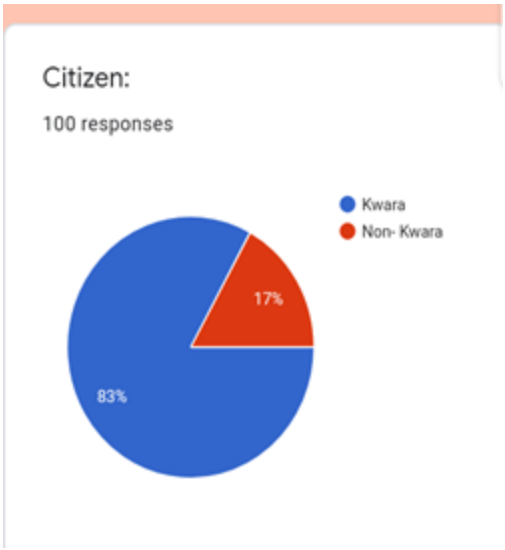

Fig. 5: Citizenship status of the respondents

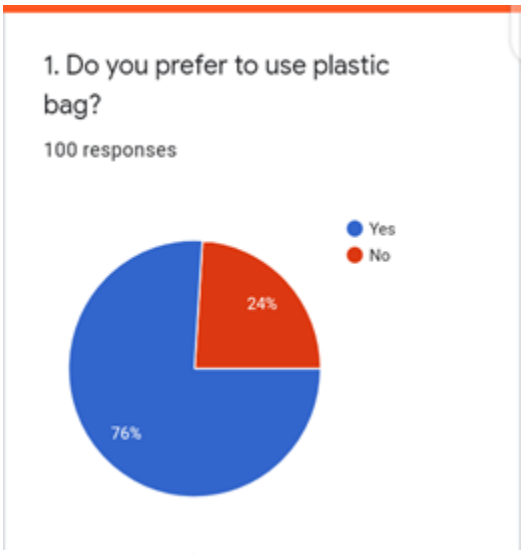

Fig. 6: Preference on plastic bag usage

Fig.6 depicts the response from the respondent that answers yes or no. In this section, the respondents that say yes to the use of plastics were 76% and those that say no are 24 %. Fig.7 shows the respondents response on the frequency of waste bag usage. About 69% sometimes use plastic waste bag. About 29% always use the plastic bags while a negligible percentage did not fall in any group. Fig.8 is showing the response on the number of times of waste bag usage. About 5 bags were used per week according to 67% respondents, 6-10 bags were used per week according to 29 % of the respondents and about 10 bags were used per week by the remaining 4 % of the respondents.

Fig. 7: Respondents frequency of waste bag usage

Fig. 8: Respondents response on the number of times of waste bag usage

Fig.9: Respondents response on the disposal methods

Fig. 9 shows the methods of disposing the plastic bag, burning and open dumping was 45% and 47% respectively. Fig. 10 depicts respondent's response on knowledge of the effects of disposing the plastic waste bag in the environment. About 92% of the respondents have a good understanding of the effect on the environment while the remaining 8% are ignorant about the effect of plastic waste disposal

Fig. 10: Respondents knowledge on problem of waste disposal

The result of this survey regarding the gender of the participants showed that highest number of females participated more than the male (57% and 43%) showing in Fig.1. This results agrees with some researcher's report where similar results were put forward where the number of male participants were very low in comparison to that of the female (Luqman and Ayanlola, 2020; Palaniappan *et al.*,2021). The age range as shown in fig. 2 is the most active in plastic bag usage is those respondents between the age of 21-30 in this survey but this contradicts the results of Duraisamy *et al.* (2023) who posited that the most actively engaging group with respect to plastic bags usage are the age group with mean of 44 and above in their study on the on the prevalence of plastic usage and the factors associated with among adults in Perambular district of South India. It is quite interesting to note this results agrees with Worthern *et al.* (2023) where it was discovered that among the respondents aged 51 and above age group, 85% did not buy any plastic bags in a typical week, while this figure was 39% for those aged 30 or younger. The Student represented the largest group, comprising 62% of the respondents (figure 3). This finding corroborates that of other researchers who worked on similar research such as Misgana e*t al.* (2022) and Oludoye *et al.* (2024). Though, other people like civil servants and traders also contributed immensely to the use and handling of waste bags in Ilorin. Marital status was examined in the survey to

know the status of respondents that are highly involved in the plastic bag usage frequently. It was discovered that the highest percentage of waste bag generation inform of waste was from unmarried people (65%) and the married people contributed about 34% as shown in figure 4. This report is not in support of Misgana *et al.* (2022) who reported no significant difference between the married and unmarried group. The data received from respondents showed that 83% citizens utilize plastic bags on daily basis compared to non-citizens which is 17%. This is an indication that the citizens of Ilorin solely depend on the utilization of plastic bags for so many thing which varies from taking water from sachet bag commonly known as sachet water, to wrapping of some local foods such a cold pap. This report is also in tandem with the result posited by Aligbe, (2021) which reported that the higher percentage of people residing in Lagos in Nigeria rely on single-use plastic bags for their everyday needs which include grocery shopping and wrapping of food items. Response also showed that preference of plastic usage by the respondents is significantly higher that other respondents that prefer other materials; reason being that plastic bags are accessible, cheap and durable. This is in alignment with the opinion of Ashan *et al*., (2020): Dalu *et al*., (2020): Aligbe (2021) where it was stated that Plastic bags which became commonly used because of their versatility, affordability and durability. The frequency of plastic bag usage in the survey showed that 69% sometimes use plastic waste bag. About 29% always use the plastic bags while a negligible percentage did not fall in any group as shown in Fig.7, which slightly agree with the findings of Wojnowska *et al*., (2022) stating that a larger percentage of the populace always engage in the use of plastic bags. Among respondents aged 21 to 30 utilize higher amount of plastic bags compared to other age range. Age range between 51 to 70 rates of plastic bags usage is insignificant this correspond to the findings of Afroz *et al*. (2017). Afroz *et al*. (2017) revealed that older people show more intentions to fight the usage of plastic bags than younger ones. Fig 9 illustrates the response on methods of waste bag disposal by the respondents. Percentage of those involved in plastic bag burning were 47% and that of open dumping was 45%, Ferronata and Torretta, (2019) are of the opinion that most people prefers to burn or engage in open dumping of plastic bags. Furthermore, the data in this survey shows that 92% of respondence were aware of the effect of plastic bags on the environment, yet they involve in inappropriate disposal of used plastic bags such as burning and open dumping which could cause serious havoc to the ecosystem.

Declaration of Conflict of Interest: The authors declare no conflict of interest

Data Availability Statement: Data are available upon request from the first author or corresponding author or any of the other authors

Conclusion: The data recorded in this work revealed the level of usage and inappropriate disposal of plastic bags in Ilorin, Kwara State Nigeria. The findings in this study calls for improved waste management policies and practices, law enforcement on issue relating to waste management as many are aware of the havoc improper disposal of plastic bags could cause but still chose to practice it and public sensitization; the public should be educated about the use of eco-friendly alternatives made of paper, cloth, and natural fibers instead of plastic bags. It is highly advised that shops refrain from selling plastic bags for free and that regulations be put in place to prevent the careless usage and recycling of plastic bag wastes as this will reduce plastic bags in circulation.

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