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**Original Article**

# Individual factors affecting waste disposal by community members of Ihunga sub-county, Ntungamo district. A cross-sectional study.

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## Abstract

### Background

Financial rewards and awareness related to the recycling benefits, and available community support were found to be critical drivers of Solid Waste Segregation and Recycling. The study aims to determine the individual factors affecting waste disposal by community members of the Ihunga sub-county, Ntungamo district.

### Methodology

A descriptive cross-sectional study design was used and it will utilize the quantitative method of data collection. The sample size consisted of 40 respondents who were selected from the community members of the Ihunga Sub-county in Ntungamo District using a random sampling method.

### Results

The female percentage of 57.5% of respondents was higher. Most respondents were between the ages of 31-35 years. All (100%) of the respondents did not have waste bins in their homes. 60% of the respondents had rubbish pits where they collect waste that decays and when the rubbish pits are full, they empty them to the plantations and work as manure. 40% of the respondents threw waste anywhere. 8, 80% of female respondents were willing to pay for improved waste disposal.7 0% of the respondents reported that urbanization has increased waste in the community, while, 30% of the respondents reported that they didn't agree with the waste disposal policies.

### Conclusions

The most significant factors affecting waste disposal by community members were knowledge about proper waste disposal management, urbanization, and failure to pay for improved waste disposal services.

### Recommendations

Community members should now think of paying for waste disposal services, especially for plastics that do not decay to avoid pollution to the environment and water bodies Households should get containers where to collect the plastics and take them for recycling.

***Keywords:*** *Individual factors, Waste disposal community members, Ihunga sub-county, Ntungamo district.*
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## Background

Globally, 2.6 billion people, or 39% of the world population do not use proper methods for waste disposal. Some 1.1 billion people still dispose of waste in the open places. Improper waste disposal is most widely practiced in rural areas; people face many health-related problems (Shewasinad et al., 2017). Similarly, a large number of people properly dispose of household waste and garbage in rural areas. In Kampala Slums of Uganda, Financial rewards and awareness related to the recycling benefits, and available community support were found to be critical drivers of Solid Waste Segregation and Recycling, therefore, there was a need for both the public and private sectors to, increase community awareness of the critical behavior, and create sustainable markets for waste segregated and recycled products (Mugambe,2022). In Kumasi Metropolis Ghana Yuan et al., (2013), revealed that the lack of waste bins in different households was

directly associated with poor waste disposal. The study further revealed that 59% of the households that poorly managed wastes lacked waste bins in their homesteads thereby prompting them to dispose of waste poorly. In Ghana, Female respondents are more willing to pay for improved waste disposal than males, since traditionally it is the role of women to clean the house and dispose of the waste (Addai & Danso-Abbeam, 2014). In Kumasi Metropolis Ghana, findings by Awunyo-Vitor, et al. (2013), revealed that age affects waste disposal negatively. Old people may consider waste collection as government's responsibility and could be less willing to manage it through paying for the services. While the younger generation might be more familiar with cost sharing and could be willing to pay. In Sweden, findings by Drake et al., (2018), revealed that there is a direct association between the areas of community residences and poor disposal of wastes. The study further revealed that 57% of the respondents who practiced poor disposal of waste resided in urban areas. This was related to the fact that the urban areas are too crowded limiting space for waste disposal. Findings from a study about Household solid waste management practices and perceptions among residents on the East Coast of Malaysia showed that About 95.9% of the respondents were aware that improper waste management leads to diseases; such as diarrhea and malaria. There were associations between locality, age, and house type with waste segregation practices among respondents (Chi-square test, $p<0.05$). Associations were also found between locality with the perception of improper waste management which leads to disease (Chi-square test, $p<0.05$) (Fadhullah et al, 2022). The study aims to determine the individual factors affecting waste disposal by community members of Hunga sub-county, Ntungamo district

## Methodology

### Study design

A descriptive cross-sectional study design was used and it will utilize the quantitative method of data collection. This research study design was preferred because it was less time consuming and in addition, the researcher collected data at once without following up with respondents.

### Study setting

The study was carried out among community members of the Ihunga sub-county, Ntungamo district. Ihunga sub-county is found in Kajara county, Ntungamo district in the western part of Uganda. The district headquarters at Ntungamo is located about 66 kilometers by road, southwest of Mbarara, the largest city in the Ankole sub-region. The main economic activity in Ihunga sub-county is farming. The study area is suitable for the study because of the various ways of waste disposal practiced by the community members in the area.

### Study population

The study targeted all community members of the Ihunga sub-county.

### Sample size determination

The sample size consisted of 40 respondents who were selected from the community members of the Ihunga Sub-county in Ntungamo District.

### Sampling procedure

The random sampling method was used to select the number of respondents that is the respondents were selected randomly among the community members Ihunga Sub-county whereby ten members were selected from each local council. This method was considered because it was easy and accurate, especially in selecting subjects in a bigger population.

### Inclusion criteria

This study included all community members of Ihunga sub-county, Ntungamo district who were willing to voluntarily take part in the study by consenting.

### Exclusion criteria

The study excluded community members of Ihunga Sub-county, Ntungamo district who were willing to participate or consent to be part of the study.

### Definition of variables

Independent were Individual factors affecting waste disposal by community members.
Socio-economic and Environmental factors factors affecting waste disposal by community members.

### Research instruments

Data was collected by structured questionnaires consisting of closed-ended questions in English language that were translated into the local language. They were administered by a researcher since not all targeted respondents knew how to read and write. The data collection tool was kept simple for respondents to respond in less than 30 minutes.

## Data collection procedure

After approval of the proposal, an introductory letter was obtained from the school administration which was then presented to the administrator of Ihunga sub-county, Ntungamo district. The researcher made a self-introduction and distributed the questionnaires to the respondents. The purpose of the study was explained to each respondent. A questionnaire was given to each participant and each respondent who fulfilled the criteria for participation in the study was greeted and made comfortable in a separate room to ensure privacy. For confidentiality and anonymity, serial numbers were used instead of names, and the questionnaires were kept in a locked cupboard and the key kept by the researcher. Then the researcher thanked the respondents after the interview.

## Data management

A pretested questionnaire was administered to a few community members at Lubya to test for its simplicity, validity, and reliability, and then it was administered to the community members of the Ihunga sub-county, Ntungamo district. In the process of data collection, each questionnaire after filling was checked for completeness and accuracy before leaving the area of study. Filled questionnaires were kept properly in a locker for confidentiality and safety.

## Data analysis

Quantitative data was analyzed by calculating and getting statistics of numerical numbers within the study. The data collected was analyzed by entering it into the computer using Microsoft Office Word and Microsoft Excel 2013 where data was represented in tables.

## Ethical consideration

An introductory letter was obtained from the principal of Lubaga Hospital Training School. This letter was presented to the administrator of Ihunga sub-county, Ntungamo district seeking permission to carry out the study. Participants received an explanation of what the study was about in simple and easy language that was understood by everyone before enrollment and only those who were willing to participate consented and anyone who wanted to pull out of the study was free to pull out. People were not forced to participate in the study which was a fundamental principle of voluntary participation in research ethics. Confidentiality was ensured to respondents and was highly observed during the study by respondents using serial numbers instead of names and questionnaires were kept in a locked cupboard and the key kept by the researcher.

## Informed consent

The researcher commenced by introducing and explaining the topic and objectives to the health workers. The respondents were informed that participation was voluntary, and an informed consent form was signed. The researcher affirmed to the respondents that the information given was strictly confidential, and serial numbers instead of respondents' names were provided.

## Results

### Respondents' Demographic characteristics

### Sex composition of the respondents

The gender of the respondents was important and was sought and presented in table 1:

**Table 1: Gender of the respondents**

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 17 | 42.5 |
| Female | 23 | 57.5 |
| Total | 40 | 100 |

*Source: Field data (2023)*

With gender, the female percentage of 57.5% (n=23) of respondents is higher than that of males 42% (n=17). This implies that there were more females than males who participated in the research.

**Table 2: Age of the respondents**

| Age | Frequency | Percentage |
|---|---|---|
| 20-25 | 9 | 23 |
| 26-30 | 12 | 30 |
| 31-35 | 13 | 32 |
| 36-40 | 6 | 15 |
| Total | 40 | 100 |

*Source: field data (2023)*

Table 2, the highest percentage of respondents being between the ages of 31-35 years, 32.5% (n=13), followed by those between 26-30 years, 30.0% (n=12). More so, 22.5% (n=9) fall within the range of 20-25 years and 36-40 years being the least with 15.0%, (n=6) respectively. This implies that the biggest age category of respondents was between 31-35 years and the least age category was between 36-40 years.

**Table 3: Education level of the respondents**

| Level of education | frequency | percentage |
|---|---|---|
| Primary | 16 | 40 |
| Secondary | 13 | 32.5 |
| Tertiary | 11 | 27.5 |
| Total | 40 | 100 |

*Source: field data (2023)*

Table 3 the highest percentage of respondents completed the primary level at 40.0% (n=16) followed by those with the secondary level at 32.5% (n=13) and those that attained a certificate at the tertiary where 27.5% (n=11). This implies that the number of respondents who stopped in the primary was the most followed by those who stopped at the secondary level and the least had attained certificates at tertiary levels.

**Table 4: Employment status of respondents**

| Employment Status | Frequency | Percentage |
|---|---|---|
| Self-employed | 16 | 40 |
| Employment | 17 | 42.5 |
| Unemployed | 7 | 17.5 |
| Total | 40 | 100 |

*Source: field data (2023)*

Table 4, the highest percentage number of respondents being self-employed with 42% (n=17), average percentage number were employed with 40% (n=16) and the least percentage number of respondents were unemployed with 17% (n=7). This implied that most of the respondents were employed and the least number were unemployed.

**Table 5: Marital status of the respondents**

| Marital Status | Frequency | Percentage |
|---|---|---|
| Single | 11 | 27.5 |
| Married | 18 | 40.5 |
| Widowed | 3 | 7.5 |
| Divorced | 8 | 20 |
| Total | 40 | 100 |

*Source: field data (2023)*

Table 5, the highest percentage number of respondents who were married with 45.0% (n=18), 27.5% (n=11) were single followed by 20.0% (n=8) divorced and lastly 7.5% (n=3) were widowed. This statistical data expressed that the highest number of respondents were married and the fewest number of respondents were windowed.



## Factors Affecting Waste Disposal by Community Members

**Table 6: Whether respondents had Waste bins at home**

| Whether respondents had waste bins at home | frequency | Percent |
|---|---|---|
| Yes | 00 | 0 |
| No | 40 | 100 |
| Total | 40 | 100 |

In Table 6, all (100%) of the respondents did not have waste bins in their homes. This was because they had enough space where to collect waste using other means.

**Table 7: Other waste disposal areas**

| Other waste disposal areas | Frequency | Percentage |
|---|---|---|
| Rubbish pit | 24 | 60 |
| Anywhere | 16 | 40 |
| Total | 40 | 100 |

Table 7, 60% of the respondents had rubbish pits where they collect waste that decays, and when the rubbish pits are full, they empty them to the plantations and work as manure. 40% of the respondents threw waste anywhere. This is so dangerous in the community because it harbors microorganisms that spread infection. When some of the respondents were asked how they dispose of plastics, the researcher found out that some collect them and burn them and others throw them anywhere.

**Table 8: Sponsors for improved waste disposal**

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 8 | 20 |
| Females | 32 | 80 |
| Total | 40 | 100 |

Table 8, 80% of female respondents were willing to pay for improved waste disposal especially plastics compared to the 20% percent of the Male respondents. This was because females generate more waste in homes compared to males.

**Table 6: Whether they pay for waste disposal services**

| Whether they pay for waste disposal services | Frequency | Percentage |
|---|---|---|
| Yes | 10 | 25 |
| No | 30 | 75 |
| Total | 40 | 100 |

Table 6, 75% of the respondents don't pay for waste disposal services. This was because they had other mechanisms of disposing of waste like rubbish pits where waste decomposes and forms manure to be used in

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plantations and plastic waste to be burnt. This was followed by 25% of the respondents who were willing to pay for waste disposal services, this was because they lived in trending centers where they didn't have enough space for waste disposal.

**Table 7: How they feel about payment for waste collection**

| out payment for waste collection | Frequency | Percentage |
|---|---|---|
| It is money-wasting | 4 | 10 |
| I rather burn my rubbish than pay money for collection services | 36 | 90 |
| Total | 40 | 100 |

Table 7, 90% of the respondents were not willing to pay for waste disposal services, they would rather burn rubbish than pay money for collection services. This was followed by 10% of the respondents who said that it was a waste of money to pay for waste collection services.

**Table 8: Population rate in the community**

| Population rate in the community | Frequency | Percentage |
|---|---|---|
| Sparsely populated | 16 | 40 |
| Congested | 24 | 60 |
| Total | 40 | 100 |

Table 8, 60% of the respondents were congested. This implied that the majority of the community members had enough space for waste disposal. This was followed by the 40% of the community members who were living in sparsely populated places that did not have enough space for waste disposal. People who are living in congested areas are especially in trading centers and extended families. This has an impact on proper waste disposal in a way that there is not enough space for waste disposal and wastes are thrown anywhere which aids in the spreading of diseases related to poor waste disposal.

**Table 9: Space in between the neighbors**

| Space | Frequency | Percentage |
|---|---|---|
| 50metres | 17 | 43 |
| 50-100 meters | 17 | 42 |
| Above 100 meters | 6 | 15 |
| Total | 40 | 100 |

Table 9, it was found that people living in a space of 50 – 100 meters were 42.5%, followed by 15% of the people who are living in a space above 100 meters. This implies that people have space for waste collection. However, the researcher found out that the transfer of wastes from places of collection to plantations was not being handled properly. This resulted in the spread of diseases related to poor waste management.

**Table 10: Does the spacing between you and your neighbors permit you to dispose of waste on the vacant land?**

| Whether spacing between them permit to disposal of waste on the vacant land? | Frequency | Percentage |
|---|---|---|
| Yes | 29 | 73 |
| No | 11 | 27 |
| Total | 40 | 100 |

Table 10, 72.5% of the respondents had enough space between their neighbors that permits them to dispose of wastes properly followed by 27.5 % who said that the space between them and their neighbors. These are the people who are living in trading centers and extended families.

**Table 11: Does cooking produce a lot of household waste?**

| | Frequency | Percentage |
|---|---|---|
| Yes | 33 | 82 |
| No | 7 | 18 |
| Total | 40 | 100 |

Table 11, 82% of the respondents agreed that cooking produces a lot of household waste. This was followed by 18% of the respondents who disagreed that cooking does not produce a lot of household waste the respondents who agreed were mainly from extended families and those who disagreed were mainly from nuclear families.

**Table 12: Do your leaders have a waste management policy in your community?**

| Whether leaders have waste management policy in the community | Frequency | Percentage |
|---|---|---|
| Yes | 30 | 75 |
| No | 10 | 25 |
| Total | 40 | 100 |

Table 12, 75% of the respondents agreed that the leaders had a waste management policy followed by 25% who disagreed that the community had no waste management policy.

**Table 13: How has urbanization in your community affected waste disposal?**

| How has urbanization in your community affected waste disposal | frequency | Percentage |
|---|---|---|
| There has been an increase in disposal | 28 | 70 |
| Many people don't agree with different waste disposal policies, | 12 | 30 |
| Total | 40 | 100 |

Table 13, 70% of the respondents reported that urbanization has increased waste in the community, while, 30% of the respondents reported that they didn't agree with the waste disposal policies.

**Table 13: In which areas do you think proper waste disposal cannot be practiced?**

| Areas | Frequency | Percent |
|---|---|---|
| Urban areas | 17 | 43 |
| Rural areas | 9 | 22 |
| Semi-rural areas | 14 | 35 |
| Total | 40 | 100 |

## Discussion

The study found that 75% of the respondents were not willing to pay for waste disposal services. This was because they had other mechanisms of disposing of waste like rubbish pits where waste decomposes and forms manure to be used in plantations and plastic waste to be burnt. The study revealed that 60% of the respondents were sparsely populated. This implied that the majority of the community members had enough space for waste disposal. This was in line with the study that was conducted in Nigeria by Hanafi (2018) revealed that persons living less

than 50 meters or between 50 to 100 meters often dump trash into designated dumping like temporary dump/landfill dust while those living between 101 to 200 meters and over 200 meters from the designated dumping sites respectively dumping their waste anywhere 72.5% of the respondents had enough space between their neighbors that permitted them to dispose of wastes properly followed by 27.5 % who said that the space between them and their neighbors was not enough. These were the people who were living in trading centers and extended families. The study findings revealed that 82% of the respondents reported that cooking produced a lot of household waste. This implied that people who are living in a space of fewer than 50 meters are likely to produce a lot of household waste as it was revealed in the study in Nigeria by Hanafi (2018) that persons living less than 50 meters or between 50 to 100 meters often dump trash into designated dumping like temporary dump/landfill dust while those living between 101 to 200 meters and over 200 meters from the designated dumping sites respectively dumping their waste anywhere. The study findings revealed that 75% of the respondents agreed that the leaders had a waste management policy followed by 25% who disagreed that the community had no waste management policy. The study findings also revealed that 43% of the respondents agreed that proper waste disposal cannot be practiced in urban areas. This was because of limited space between the households and overcrowding. The study conducted found that 100% of the respondents had no waste bind in their houses which was directly associated with poor waste disposal. The study further revealed that 100% of the participants had no waste bins in their homes but had enough space where they collected waste and they were not willing to pay for improved services for waste disposal which was contrary to what was found out in a study in Ghana by Addai and Danso-Abbeam (2014) that revealed that female respondents were more willing to pay for improved waste disposal services than males. The study also revealed that educational level influenced waste proposal as it is indicated that 40% of the respondents had stopped at the primary level. This implied that their knowledge of managing waste was limited and because of that, it had resulted in health-related diseases like diarrhea.

## Conclusions

The most significant factors affecting waste disposal by community members were knowledge about proper waste disposal management, urbanization, and failure to pay for improved waste disposal services.

## Limitations of the study

Financial constraints since the study didn't have any external facilitation.

High expectations from targeted participants

Time limitations due to fixed class timetables made access to targeted respondents a challenge.

## Recommendations

Community members should now think of paying for waste disposal services, especially for plastics that do not decay to avoid pollution to the environment and water bodies Households should get containers where to collect the plastics and take them for recycling.

Community leaders should put in place policies to guide the community members on waste disposal management.

Every family should have a rubbish pit where the waste can be collected and later covered when it's full. This will help to reduce health-related diseases like diarrhea, typhoid, and other communicable diseases that have become a threat to the community.

The household should have containers where to collect plastics and park them for recycling. This will help reduce the pollution of water bodies that are contaminated with plastics, which also act as breeding areas for mosquitoes that spread Malaria as one of the communicable diseases.

## List of abbreviations

**MOH:** Ministry of Health

**UNMEB:** Uganda Nursing and Midwifery Examination Board

**WHO:** World Health Organization

**UN:** United Nations

**HMIS:** Health Management Information System

## Source of funding

The study was not funded.

## Conflict of interest

The author did not declare any conflict of interest.

## Author contributions

Felix Muhumuza collected data and drafted the manuscript of the study,

Donatus Kimera supervised all the stages of the study to the drafting of the manuscript,

## Data availability

Unpublished research reports submitted to the Uganda Nurses and Midwives Examination Board and Lubaga

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## Author Biography

Felix Muhumuza is a student with a diploma in Nursing at Lubaga Hospital Training Schools.
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