

Assessment of awareness on health effects of solid waste generated by households: A case study of Mbeya City, Tanzania

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Abstract: The amount of solid waste generated in Mbeya city is estimated to be 167 tons per day, and the one's which is collected is 74 tons, which means 93 tons of waste generated is not collected. The waste generated is directly proportional to the population, it is estimated one person per day in Mbeya city generates 0.5 kg of solid waste. Population of Mbeya city is 385, 279 based on 2012 National Census. As it is well known, as days goes on most of people in most countries of sub Saharan Africa are going to the cities. As a result, it is envisaged that, the quantity of waste in Mbeya city will also increase in the future. So there is the need of awareness on health effects of solid waste in order to increase the quantity of waste collected by local authorities or private organizations in comparison to the waste generated.

The study intended to know the awareness of households on the health effects of solid waste generated. The study has revealed that, nearly 39% of the respondents are not aware of the health effects. Further, it was seen that, the ones who are responsible for handling of waste in many households is women's. Radio's and TV have played a great role in disseminating health effects of solid waste to many of the respondents who are aware on the health effects of solid waste.

The study shows that, there is the need of health effects education on solid waste, 62% of the households are in need of this education. The awareness will raise the quantity of solid waste collected by the authorities responsible.

Keywords: solid waste, awareness, health effects, households.

1. INTRODUCTION

There are various definitions of Municipal Solid Waste, UN Habitat has defined as, Municipal Solid waste (MSW) is wastes generated by households and wastes of a similar nature generated by commercial and industrial premises, by institutions such as schools, hospitals, care homes and prisons, and from public spaces such as streets, markets, slaughter houses, public toilets, bus stops, parks, and gardens. (UN Habitat, 2010). According to Tchbanoglous et al., 1993 and Kaseva & Mbuligwe, 2005, Solid Waste is all the waste arising from human and animal activities that are normally solid and that are discarded as useless or unwanted. Waste generation encompasses those activities in which materials are identified as no longer being of value and are either thrown away or gathered together for disposal (Tchobanoglous and Kreith, 2002). Though for the scope of this paper, we will concentrate on solid waste generated in households.

Solid waste generated in Mbeya city per day amount to 167 tons, of which 74 tons is collected and disposed, and the remaining ones remains unattended (Mlozi, 2011). Generation rate of solid waste per day per person in the city is estimated to be 0.5 kg (Gidde et al., 2008) while the generated solid waste for the country in general is estimated to be 1.0Kg/day per person (UNEP, 2016). The quantity of solid waste generated per day is increasing with the fact that, the number of people living and working in the cities is increasing day to day (UN Habitat, 2010). In urban centres, less than half of the solid waste generated is collected and 95% of that is neither contained nor recycled (Simelane and Mohee,

2012). Waste generation per person depends upon the socio economic condition of the place, cultural background, climatic condition and seasonal variations (Mlozi, 2011).

The increasing rate of solid waste generated in Mbeya, and unbalanced collection of waste and the ones generated calls for the need of knowing the environment awareness to the households in Mbeya City. According to McAllister, 2015, one of the major constraints for the developing country in managing solid waste is lack of education and awareness. The need to improve public awareness and people's participation is widely recognized by researchers as the way to have sustainable management of solid waste. For developing countries improved education and awareness programs could be an effective measures in solid waste management (McAllister, 2015).

Most of the wastes generated in East Africa Urban Centres are decomposable organic materials (Okot – Okumu, 2012). Households are the lead contributor of the total waste generated, followed by market and commercial buildings (Kaseva and Mbuligwe, 2005). 57% of solid waste generated in households in Mbeya city comprises of the daily food remains, fruit peels, vegetables, grasses and plant trimmings from gardens and the remaining includes paper waste(12%), plastic waste (9%), textile waste (6%), inert waste (3%), glass waste (4%), woods waste (4%), e – waste (2%) and others (3%) (Mgimba, C and Sanga, A., 2016). As 57% of the generated solid waste in Mbeya are biodegradable, the community can use advantageously that waste by decomposing and obtaining manure (Mlozi, 2011). The major limitations of collecting solid waste generated in household in Mbeya city is collecting tools (Mlozi, 2011). Uncollected waste, are caused by number of reasons, some being constraints like lack of trucks and lack of enough man power by local authorities (Okot – Okumu and Nyenje, 2011). The increased quantity of solid waste generated and the inefficient ways of collecting ways, has resulted to decrease in attractiveness for many of the African cities (Simelane and Mohee, 2012)

Solid waste generated has health risks, and this health risk is caused by many factors such as composition of raw waste, that is waste with toxic, allergenic and infectious substance, also the nature of the solid waste as it decomposes, some of them releases gases, dust etc (Cointreau, 2006). Communities in developing countries have turned in waste disposal methods such as open dumping and burning which have been proved to be destructive to human health and the environment (Mwanthi and Nyabola, 1997; McAllister., 2015)

The accumulation of solid waste in streets offers a good condition for the spread of germs, insects, rats and other diseases (UN Habitat, 2010). Uncollected waste in streets leads to health effects, unattracting aesthetics and environmental impacts (Okot – Okumu, 2012)

2. METHODOLOGY

2.1 Area of Study

The area of study for this research was Mbeya City. Mbeya City is located south western part of Tanzania. According to 2012 Census, population of Mbeya city is 385,279.

2.2 Sample Size

The sample size used was 42 households, whereby one respondent from each household was involved in responding to the interview. 8 wards out of 36 wards in the city were selected; the wards and households were selected randomly. Out of 42 respondents, 3 were males and 39 were females.

2.3 Data Collection

Data were collected by using structured interviews and observation.

2.4 Data Processing and Analysis

The data gathered, were analysed by using MS Excel program.

Table 1: Households interviewed in wards

Wards	Population as per 2012 census	No. of households interviewed
Ruanda	21,927	8
Ilomba	34,021	6
Nsalaga	18,993	4

Forest	6,649	4
Iyela	31,634	6
Uyole	11,543	7
Mwakibete	23,319	4
Iwambi	12,387	3
Total		42

Source: National Bureau of Statistics (Website) and Field Work 2016.

3. RESULTS AND DISCUSSION

3.1 Gender of the households interviewed

For the sample interviewed, 93% were female and 7% were male. The reason behind for that results was due to the fact that, most of families, the ones who are responsible for collecting, disposing and managing waste at home's are women's. Further, women's were the ones who were available at home at the time the researcher were conducting interviews.

3.2 Storage Method of Solid Waste at household

The results revealed that, 53% of the households store the solid waste generated in plastic bags (plastic sacks), 30% of the households store in dustbin, 15% of the households store in local dumps at home and 2% don't have any place to keep solid waste while waiting for the final disposal. This may be caused due to the fact that, most of the families; they don't want to see waste around their areas.

3.3 Final disposal of solid waste

The results revealed that, 11% of the households, after they have kept the waste to their homes, they are waiting for vehicles which are visiting in streets for collecting waste, for the final disposal, 32% of the households burn the solid waste which they have kept, after the tool used is full, 18% of the households buries solid waste collected and 39% depends on street dumps available, those waste disposed in special dumps available in some streets are collected by the city trucks. Option of burning and composting waste as a means of minimizing waste is also supported by Mbuligwe and Kassenga (2004). The percentage of the ones who depends on street dumps is very small due to the fact that, most of streets do not have those dumps, also the ones who depends on special private vehicle for that task is not big, based on the fact that, the service requires payment, so some of them fails to afford that service.

3.4 Awareness on health effects of solid waste

The results revealed that, 39% of the respondents are not aware of the health effects of solid waste, while 52% are aware of some health effects, like erupted diseases such as cholera, and 9% were aware of the health effects of solid waste. This results shows that, education on health effects of solid waste is highly needed in the community.

3.5 Source of information on awareness of health effects of solid waste

For the ones who are aware on health effects of solid waste, to whatever extent either some or full health effects, the results revealed that, the source of information for them was, 46% from Tv and Radios, 26% from friends, relatives and colleagues, 15% from schools and 13% from local magazines and Books. Tv and Radios is highly used as a source of information due to the fact that, most of the respondents were female, who stays at home and most of the time they are listening to different sessions which are aired out in radios and TV.

Table 2: Source of information on awareness of health effects on solid waste

Source of Information	% of respondents who are aware on health effects of solid waste
TV and Radio's	46%
Friend's, Relatives and Colleagues	26%
School's	15%
Local Magazines and Books	13%

Source: Field Work 2016

3.6 Need of Health education on effects of solid waste

The results revealed that, 66% needs health education on the effects of solid waste at households, while 34% don't see the importance of that education. The ones who don't see the importance of that education do not see if they will be benefited with that education, since they have never been affected with those solid wastes.

4. CONCLUSION

In conclusion, the study has shown that, 39% of the households are not aware of the health effects of solid waste, while a large number of households are aware of some health effects. Further, it has been revealed that, most of the families, women's are the ones who are responsible for handling of solid waste generated in households. Generally, 66% of the respondents need education on health effects of solid waste. Raising awareness to the households on the health impacts of solid waste will help in reduction of solid waste which is not collected as individuals/households will work hard including pushing local authorities in making sure that all or almost all of the waste generated in the city is collected by the authority and disposed to the designated place for the disposal of the solid waste in the city. Raise in awareness will also reduce the number of households who use method of burning solid waste as a method of reducing waste around their homes, by having awareness they will know health impact of burning solid waste and hence avoid possibilities of getting effects on their health.

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