

Factors associated with illegal dumping in the Zondi area, City of Johannesburg, South Africa.

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ABSTRACT

Illegal dumping is a major problem which was identified in the City of Johannesburg (CoJ) Metropolitan Municipality in South Africa. The problem of illegal dumping is not unique to this municipality; it has also been identified in other municipalities in South Africa and in most parts of the world. The aim of the study was to assess the factors associated with the prevalence of dumping in Zondi Township, CoJ, South Africa. Semi structured questionnaires were used to interview the sampled respondents and the dumping spots were observed. A review of Integrated Development Plan (IDP) found no dumping prevention strategies in almost all the municipalities in the country. In order to find a solution for this problem, the root causes of this phenomenon should be clearly identified and understood. The results clearly highlight that lack of or irregular waste removal was the main driver of occurrence of illegal dumping. Therefore it is recommended that the CoJ improves waste removal services in order to curb waste illegal dumping.

KEYWORDS

Illegal dumping, associated factors, waste removal

INTRODUCTION

According to a literature review of research conducted in 11 African countries and published between 2006 and 2014, between 25% and 90% of waste is indiscriminately dumped (Dladla *et al.*, 2016). Illegal dumping is a common problem affecting many developed and developing communities (Ichinose *et al.*, 2011). The City of Johannesburg (CoJ), like other South African municipalities identified illegal dumping as a threat to the sustainability and wellbeing of communities (CoJ, 2017; CoT, 2014; BCMM, 2014). Thus dumping of waste is a common problem which needs urgent solutions.

Despite the high prevalence and the significant risks associated with illegal dumping, available literature shows that the CoJ and most municipalities in South Africa do not have an illegal dumping prevention plan (BCMM, 2014; CoT, 2014; Gumbi, 2015; MMM, 2017). Most of South African municipalities have mitigation plans for illegal dumping, which is to clean-up. The clean-up plan is an expensive method and cost the country a lot of money. Ichinose and Yamamoto (2011) also found that the UK Environment Agency estimates that £100-150 million is used for clearing up illegally dumped waste. CoJ is not an exception as it was reported that the city spends approximately R58 million every year to clean-up illegal dumping (Pikitup, 2017). Clean-ups are clearly not the best solutions to waste dumping, yet there are no clear best solutions known to prevent illegal dumping at the moment in COJ and internationally.

The other BRICS countries have similar illegal dumping problems and they also do not have proper prevention strategies in place (John *et al.*, 2004; Tekes., 2013; Brown and Sako., 2016; Bukova *et al.*, 2016). This problem is not unique to South Africa and BRICS countries; it is also a serious issue in most parts of the world including the C40 municipalities (Chen *et al.*, 2014; National Environment Authority, 2014; Annepu and Themelis, 2013; Amasuomo and Baird, 2016). It is evident that dumping is a worldwide problem and it needs to be addressed, hence there is a need to get the basics right and understand the causes of the phenomenon.

In order to come up with cost effective and best solution for dumping problem, the in-depth understanding of the factors associated with dumping would be of great help. Hence the aim of the study was to assess the factors associated with the prevalence of dumping in Zondi Township, CoJ, South Africa. The results of this study are of importance to a range of stake holders who are involved in waste management such as the policy makers who need an understanding of the drivers of illegal dumping.

Background

In the CoJ, between 1.6 and 1.8 million tonnes of waste is produced per year (CoJ, 2017:91). About 45% of households in the CoJ of the 1.85 million households receive regular waste removal services (CoJ, 2017:76). Currently, the CoJ does not have a clear plan of preventing the illegal dumping; rather, it has the mitigation plan which is to clear-up. This is the same in almost all the municipalities in South Africa. Given the amount of waste generated in the CoJ per annum, there is an urgent need to study the factors associated with dumping so as to find proper solutions.

Pikitup is a State Owned Entity (SoE) which is mandated for waste management activities including waste collection and disposal in the whole of the CoJ including the Zondi area. Factors associated with illegal dumping as identified by (Pikitup, 2014; 19&20: CoJ, 2011a; CoJ, 2017) include; the lack of or irregular waste removal services; lack of waste disposal; short operational hours of the landfill sites; unwillingness of the community to pay for the waste removal services; convenience in terms of distance to the landfill sites and lack of knowledge of the community. Among these highlighted factors associated with dumping, the lack of services such as proper refuse removal was identified as the most important factor in Japan (Ichinose and Yamamoto 2011). The study by Ichinose and Yamamoto (2011) found that there is a relationship between the frequency and the availability of waste removal and illegal dumping occurrence in Japan.

Study area

Zondi is located in Soweto Township in the CoJ, Gauteng Province, South Africa. This is a predominantly occupied by black people. People in Zondi are mostly in a low income group, some in middle and other few in high.

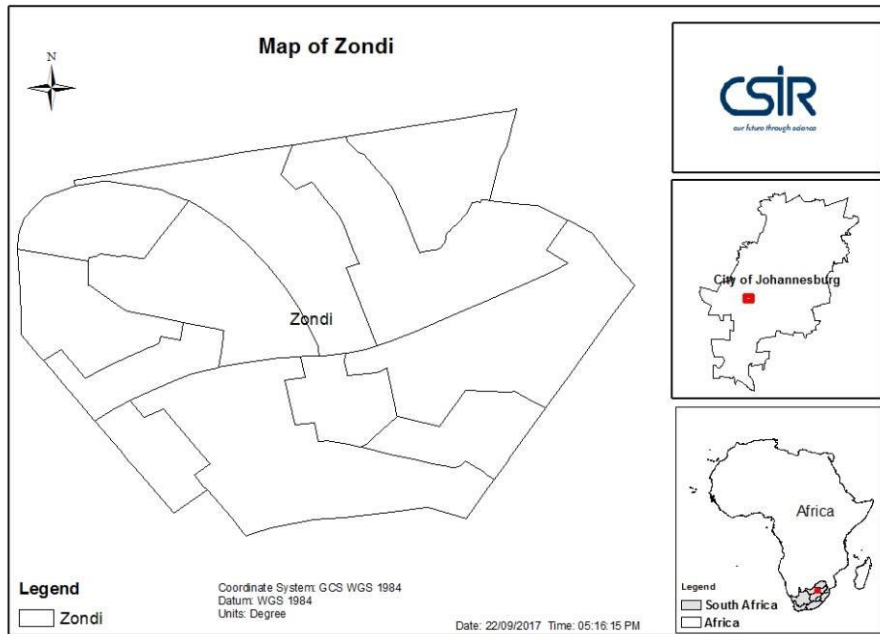


Figure 1: Map showing the location of Zondi within the CoJ

Materials and methods

Research design

A survey was conducted in a form of a questionnaire to get more insights of the factors associated with illegal dumping. Rosenthal (2016) states that the quality of the data gathered using qualitative methods, which is the interview in this case, depends on the type of questions asked. The type of questions asked was guided and informed by the literature review. Observations were also done to confirm the waste material dumped in the existing dump spots as it was reported by the respondents. The respondents were purposefully sampled and 56 community members were interviewed. Households and businesses at 1km radius around the existing dumping spots were all sampled. The collected data was captured on excel and several descriptive statistical analysis and content as suggested by Forman *et al* (2008) and Rosenthal (2016) were done to draw scientific meaning from it.

Results and discussion

A total of 56 respondents (community members) were interviewed and they included 32 males, 24 females from which 43 were the households and 13 were businesses.

Who is dumping?

Results highlight the majority (56.78%) of the people who dump waste in the Zondi area are the members of the community, followed by the small businesses (12.16%) and small portions of private garden services, big businesses and others. It was found that there are a numerous reasons why these community members dump their waste illegally.

What do people dump?

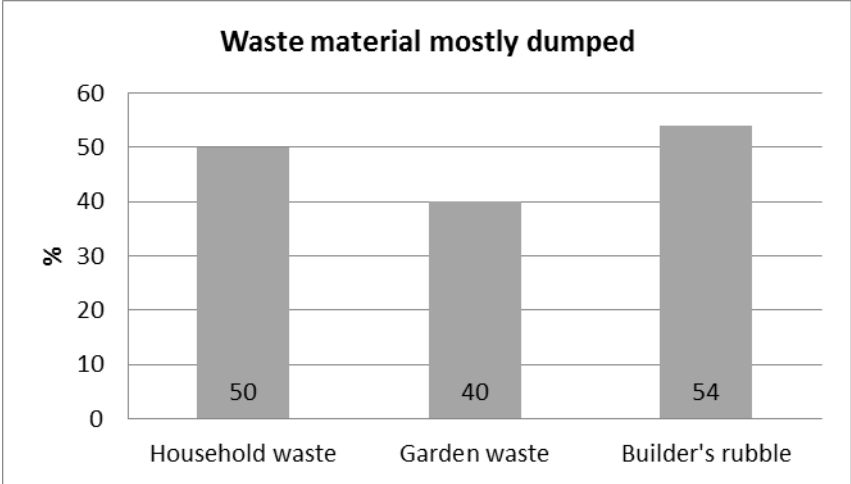


Figure 2: Waste material commonly dumped in the Zondi area

Source: Field work

The dominant waste material which was observed by the respondents in the dumping spot of the Zondi area is builder's rubble, followed by household waste and then garden waste (figure 2). This finding corresponds with the finding in figure 4 where lack of rubble and irregular household waste removal were some the highest contributing factors to illegal or open dumping.

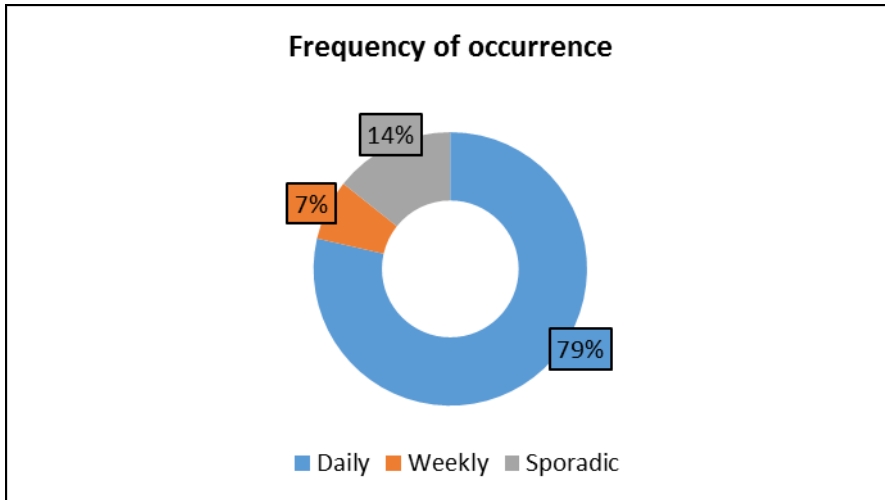


Figure 3: The frequency of waste dumping prevalence in the Zondi area

Source: *Field work*

Findings in figure 3 revealed that about 79%, 14% and 7% of the respondents reported that illegal dumping of waste in the study area occurs daily, sporadically and weekly respectively. This finding relates to the lack and irregularity of waste removal as a contributing factor which was raised by the Zondi community.

Factors associated with dumping

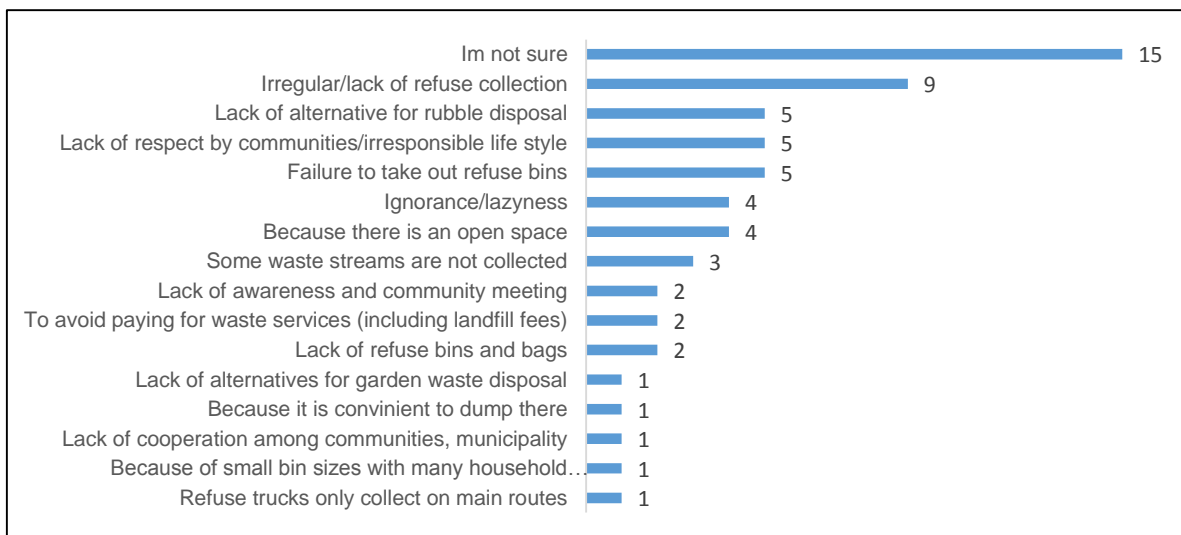


Figure 4: Identified factors associated with dumping in the Zondi area

Source: *Field work*

The total number of interviewed respondents were 56 and the significant portion (26.79%) of respondents in the Zondi area indicated that they are not sure why do people dump, 16.07% identified irregular / lack of refuse removal, 8.93% pointed out that lack of alternatives for rubble collection or disposal contributes a lot to causes of dumping. The respondents were not limited to one response hence there are more than 56 responses. There was other reasons but the above highlighted are key factors associated with dumping. This finding supports what is found in the literature from the previous studies (CoJ, 2011a; Pikitup, 2014; Gumbi, 2015).

CONCLUSIONS

Illegal dumping is a problem in the Zondi area. The key factors associated with illegal dumping identified in the study were the lack of or irregular waste removal services and lack of builder's rubble disposal options. It was found that CoJ and almost all the municipalities in the country share similar factors associated with illegal dumping and did not have illegal dumping prevention strategies in place. These factors were also found in the literature to be the same in most parts of the world. It is recommended that the CoJ improves the waste removal services and provide options for rubble disposal to the people so that there can be minimal or no illegal dumping.

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