

## **A Review of the Working Conditions and Health Status of Waste Pickers at Some Landfill Sites in the City of Tshwane Metropolitan Municipality, South Africa**

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### **ABSTRACT**

*Waste management is a global phenomenon and a challenge to all nations. There is a need to ensure that waste is handled in an environmental friendly and healthy manner. In South Africa, the last stage of the life cycle of waste is at the landfill sites, which are normally on the outskirts of town and away from communities because of their release of harmful pollutants. As in other developing countries, there are people who try to make a living by engaging in waste picking at the landfill sites. This study researched on working conditions and health status of waste pickers working at some landfill sites in the City of Tshwane metropolitan Municipality; namely Ga-Rankuwa, Onderstepoort and Hatherley. The study used a multi-method approach, where both qualitative and quantitative factors of research were utilized. The results from the 176 waste pickers in the survey showed that 43% believed that their illnesses were work related, while 34% said they were not ill at all. About 19% of the waste pickers in the survey believed their illnesses were not work related. Their working conditions remain undesirable, but their work serves as their main source of survival. Waste pickers at landfill sites are aware of the risks of working at the landfill sites especially in inhuman working conditions. There is therefore a need to facilitate improvement in their working conditions and raise awareness on their health status.*

**Keywords:** Waste pickers, Landfill site, Working conditions, Health status, Waste management

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### **INTRODUCTION**

Disposal of solid waste at a landfill site is the primary disposal method used in South Africa, as in most developing countries [1,2]. According to Godfrey and Oelofse [3], in the past, solid waste was deemed something to be discarded, and without any value, but this however, recently changed. Lately, municipality waste produced from residential and commercial sources, has become an economic resource for other people. Solid waste that is not well-handled can however, pose serious environmental and health risks, with negative implications to human life and environmental sustainability [4]. Landfill sites release a wide range of harmful pollutants such as leachate, gases and particulate matter that have the potential to cause human illness and contamination of the soil, air and bodies of water [5].

In South Africa, many landfill sites practice waste picking. Usually poor people resort to picking in order to earn a living and typically do so under unhealthy and unsafe conditions. For some individuals and families, waste picking has become a way of survival and the activities of waste pickers fall within the informal economy. Waste pickers collect materials discarded as waste and add value to them by sorting, cleaning and at times altering the physical shape to facilitate transport or by combining material to make commercially viable products.

The health and safety risks associated with informal recycling include occupational health risks posed to waste pickers and community health risks posed to the public. The nature of the work waste pickers are involved in exposes them to

potential pathogenic bio aerosols that may lead to spreading of various diseases. Waste pickers are at risk of exposure to diseases as they come into direct contact with decomposed, highly mixed waste streams with organic material [6]. The use of heavy machinery in landfill operations also poses a risk to waste pickers and could become a risk factor when salvaging on landfill sites.

The primary aim of this research was to identify the health status and document the working conditions of waste pickers working at three landfill sites in the City of Tshwane Metropolitan Municipality. Considering that solid waste can be a resource used to provide employment opportunities, it is necessary to educate people, especially waste pickers on good waste management practices. Researchers have noted that little attention is given to the human health risks to which waste pickers are exposed to [7-10]. As much as it is understandable that waste pickers earn a living from this practice and at one site in the study (Hatherley), living in close proximity to the landfill site, they are creating a security problem and liability for the management of the site.

The distinguishing characteristic of the work life of waste pickers is that they are not paid in an institutionalised or regulated manner for the waste they collect [11]. Waste pickers are involved in an informal activity that is unregulated, labor-intensive, requiring low technological skills and pays very low wages [12]. Since waste picking is unregulated, those involved in it usually become victims of labor exploitation by recycling companies or their intermediaries. Waste pickers target mostly landfill sites since large volumes of waste are deposited onto the landfill sites. Once the waste disposal trucks offload, waste pickers rush to search and remove the recyclables of interest before the waste is compacted. Waste pickers work in conditions that are physically taxing as they work for long periods in the sun, carry their recycled materials and have little time to rest.

## MATERIAL DESIGN AND METHOD

### Study area background

The City of Tshwane Metropolitan Municipality (CTMM) was established in 2005 and when founded was made up of 13 former city and town councils. The incorporation of Metsweding District Municipality in 2011 added a significant amount of rural and semi-urban area to Tshwane's eastern boundary. The City of Tshwane Metropolitan Municipality's area increased from 2 198 km<sup>2</sup> in 2010 to 6 368 km<sup>2</sup> after the incorporation of Metsweding. The CTMM has a population of approximately 2.9 million people which is made up of 911 536 households as determined through the 2011 Census [13].

### Landfill sites

CTMM has 10 landfill sites (of which five are operational and five are closed). The actual annual volume of waste disposed to landfill in the Tshwane area alone (i.e., excluding Metsweding) was estimated at 1 443 290 m<sup>3</sup> in 2011 (Statistics provided by CTMM's Operations officials).

Now according to CTMM landfill operations manager out of the five operational sites, the smaller sites, which are Soshanguve, Ga-Rankuwa and Bronkhorstspuit, received between 14,000 and 18,000 tons of waste per month while the two larger sites, Hatherley and Onderstepoort received between 150 000 and 250 000 tons of waste per month. The biggest challenge was the lack of waste information data at all the sites. There is no comprehensive database overlying management information systems in place to produce reliable data and management information, and there are no weighing bridges at the sites. This study was undertaken at three landfill sites in Tshwane Municipality and below is their coordinates and short description.

#### *Ga-Rankuwa landfill site*

The landfill site is surrounded by township to north and south with coordinates 25°34 '57" S; 27° 59' 05" E.

#### *Onderstepoort landfill site*

The landfill site is surrounded by major transport links railway line as well as nature reserves with coordinates 25°39'02"S; 28°09'07"E.

#### *Hatherley landfill site*

The landfill site is very close to township and there is a new development around the site with coordinates 25°44'26"S; 28°24'01"E.

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**Activities on different sites****Ga-Rankuwa**

Salvaging of waste for recycling takes place on site and according to the waste pickers' committee at that site, there are 56 waste pickers on site who come on a daily basis to sort from the site. The site is less than 5 km from a residential area

**Onderstepoort**

The site is not fenced but there is some kind of order on site. There is recycling taking place on site, which is rather organized. According to the waste pickers committee, 256 waste pickers work on the site. They have divided themselves into groups to work on certain weekends but during the week, they all come.

**Hatherley**

There are many waste pickers at this site because it is the largest site and when Kwaggastrand landfill site closed, more waste pickers chose to go to this site. According to the waste pickers' committee, there are between 500 and 600 waste pickers on site. The large number of waste pickers on site has led to many challenges and at the site the researcher only managed to work with two cooperatives of waste pickers and not all waste pickers were involved.

**RESEARCH DESIGN**

The research adopted a multi-method design to address the quantitative and qualitative aspects of the research problem. As stated by Leedy and Ormrod [14], multi-methods design, is the use of more than one approach to the research problem in order to enhance confidence in ensuing findings.

In this research project, the researchers used a methodological triangulation and this refers to the use of more than one method for gathering data. Data was acquired by means of questionnaires completed by waste pickers and unstructured interviews with municipal workers. The researcher also made own observations during site visits and made field notes regarding her findings.

**RESULTS AND DISCUSSION**

The results obtained were integrated and interpreted to provide a more comprehensive understanding of the different aspects that were discovered during this study.

**Demographic characteristics of waste pickers**

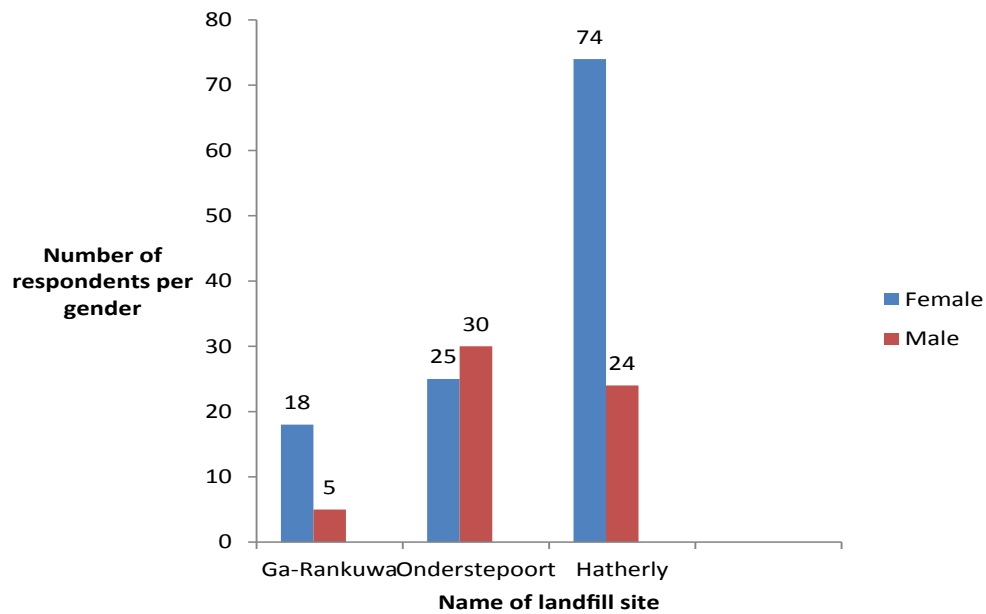
A sample of 176 waste pickers participated in the survey. In this study, 66% were female and 34% were males. A study of street waste pickers in Pretoria by Schenck and Blaauw [15] revealed that there were more males (97.2%) on the street than females. According to Viljoen [16], waste pickers on the streets have to cover long distances looking for recyclables and carry heavy loads of waste. The larger number of females at the landfill sites may be related to the fact that at the landfill sites they do not have to cover long distances searching for recyclable materials.

The gender distribution pattern of participants per site is as in Figure 1. These results show that there are still more females at different sites than males, except at the Onderstepoort site where male participants were more by five than the female participants (Figure 1).

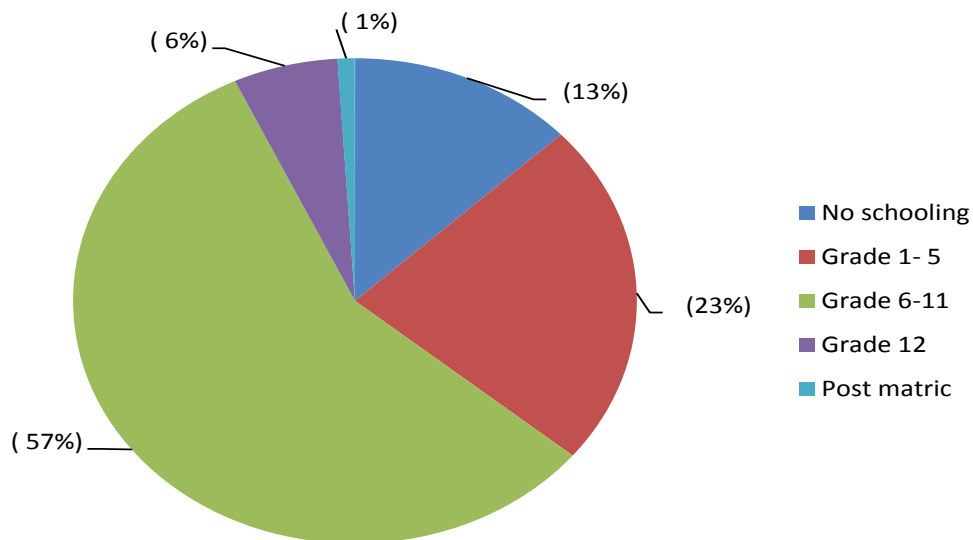
Various factors explain why the numbers were not evenly distributed. A number of males did not want to form part of the study, as they did not want to talk about their health status, whereas most females were open in revealing their health status.

One of the rules that waste pickers have made at the landfill sites in Tshwane is that they do not allow children on site and no people under the age of 18 allowed entering the sites. In the study, the youngest person was 22 years old and the oldest was 76 years. The mean age was 45 years with a median of 44 years. It is important to note that the majority of waste pickers are in the age group perceived as an economically active period and most of them have families they have to provide for. The findings in this study and that of Medina [17] are similar to those reported by Tevera [18], where the same age group ( $\geq 30$  years) constituted the larger proportion of waste pickers at landfills.

Working in the informal sector does not require any kind of formal education; hence, there are more people without formal education at the landfill sites. Waste pickers are known to have low literacy levels, are unskilled and have low levels of education [15,19]. Figure 2 reveals the highest level of education attained by the participants (Figure 2).



**Figure 1:** Gender profile of waste pickers per landfill site



**Figure 2:** Highest level of education attained

Furthermore, the findings revealed that 38% of the participants would still like to further their education, and those who wanted to do so, wanted to study nursing, handwork, teaching and a majority wanted to obtain Grade 12. The majority of waste pickers indicated that financial challenges were the main reason for leaving school early and they had to look for ways to sustain themselves.

**Working conditions of waste pickers**

Waste pickers suffer ergonomic challenges due to the physically taxing nature of their work and psychological and social disadvantages from their low social status.

Working days of waste pickers varied due to their self-employment status. Most of the participants worked five days per week (53%), with 42% working six days per week. There were participants who worked seven days per week (4%) and some worked three and four days per week (0.55%). Waste pickers work all day and take breaks when going to eat and rest. The larger sites, Onderstepoort and Hatherly, have people selling food and cooking on site so that the waste pickers can buy from them. They however, do not position themselves near where the waste is dumped, but near the sorting areas on site.

Working at a landfill site also has its own demands; waste pickers in some instances have to carry their bags from the dumping site to the sorting area. There are also vans on the landfill site that work there only to help carry the bags to the sorting areas with a compensation agreement with the waste pickers. In the study; 90% of the participants revealed that they lifted heavy objects and bags containing different recyclables as in Figure 3.

From the study, 78% revealed that they had never been injured while at work, whereas 22% reported injuries while at work. The injuries included bottle cuts, metal cuts, tripping and falling while running for trucks and there were two who were hit by a waste dumper.

Working at a landfill sites has its risks and in the study, most of the participants did not feel safe working as the landfill site but stated that they had nowhere to go as this was their only source of income.

### **Analysis of waste pickers' health**

In this study, subjective assessments were gathered and the study was based on the responses obtained.

Waste pickers rated their health and the majority of the participants reported their health to be fair when compared to their peers in their communities. Participants with ages of between 19 and 29 reported their health was excellent when compared to their peers. It was worth noting that the majority of waste pickers later revealed that they could not have said that their health was poor because of the fear of eviction from the landfill site. This was one of the shortcomings of a subjective assessment as people responded untruthfully with the view to protect their right to work.

In this study, 59% of the participants said they never had any medical consultation in the last six months, whereas 41% revealed they had consulted either a clinic or hospital. Reasons for various consultations are as in Table 1.

Headache problems appear to be a prevalent condition among waste pickers, and have shown to be one of the recurring complaints in other studies as noted by Nguyen et.al. [20]. In this study, there were participants who mentioned that they were on TB treatment and visited the clinic regularly.

### **Health problems experienced in the last six months**

Waste pickers were asked about the prevalence of certain diseases in the last six months and they responded as in below:

#### ***Musculoskeletal problems***

In this study 55% of the participants reported that they had no musculoskeletal problems. About 37% had both joints and back pain problems, whilst 10% of the participants had only back problems and 2% with only joint problems. The reasons for the above ranged from bending for long periods while working, walking for long distances and there were older people who believed that their problems had nothing to do with their work but was due to aging. The findings were similar to those found in Vietnam, where Nguyen et al. [20] reported that many waste pickers surveyed had back pain, which was attributed to the constant bending motion required to search for waste.



**Figure 3:** A woman carrying a bag of recyclables

***Skin problems***

From the survey of 176 waste pickers, 146 participants said they did not have any skin problems whereas nineteen people stated that they frequently suffered from rashes, whilst ten of them had cuts on their hands and six people complained of irritated skin. There was only one person who complained of bruises. There were participants who said one of the reasons they may be having irritated skin is from washing with unclean water as in Figure 4, though they boil the water first. Other waste pickers revealed they did not use water from nearby wells, but opted to change and wash themselves at their homes. This they saw as protecting themselves from skin illnesses. It was worth noting that some of those who used unclean water were participants who did not want their neighbours back in their communities to know the kind of work they do (Figure 4).

***Respiratory problems***

The majority of participants complained about respiratory problems more than any other illnesses. The findings are as in Figure 5.

The findings agreed with a previous study by Oyelola *et al.* [21], where it was reported that coughing appeared to be a frequent problem for waste pickers working at landfill sites. A few mentioned that they suffered from chest pains and they were males. Gutberlet and Baeder [22] reported that previous studies elsewhere showed that chest pains occurrences increased with the longer they spent working at the landfill site. It is worth noting that chest pains may be affected by one's lifestyle, including smoking and heavy drinking. One of the critical challenges that affected waste pickers was that the majority of them did not wear masks to protect themselves from dust and any other toxins they could inhale while at work. It was further reported that of those who suffered from cough and shortness of breath, there were some on TB treatment and asthma treatment and this had nothing to do with the work they were involved in. Respiratory problems were due to long dry periods at landfill surfaces that produced dust from the waste (e.g. with inhalable toxic chemicals) and the landfill surroundings as reported in the study by Gwisai *et al.* [23].

**Table 1:** Reasons for medical consultation, n=72 (waste pickers who consulted in the past six months)

CONSULTATIONS	NUMBER
Bottle cut	1
Eyes check up	5
Joints	6
Lungs	7
Chest pains	13
Headache	10
Cough/Flu	10
TB treatment	5
Asthma treatment	15



**Figure 4:** Unclean water that some of the waste pickers use for washing

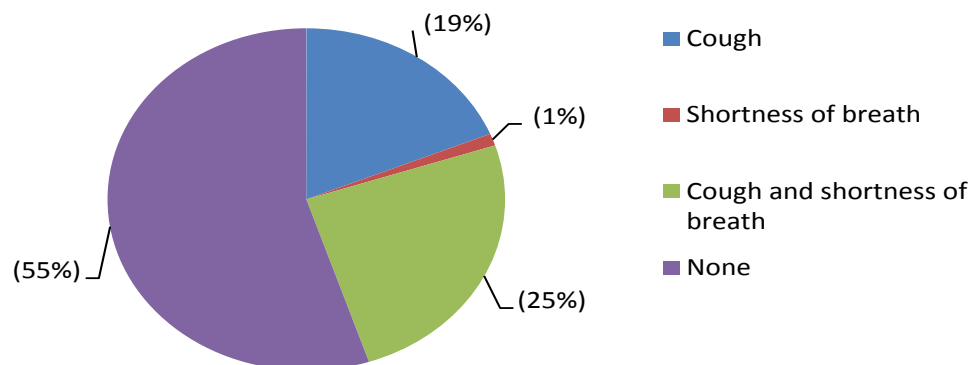


Figure 5: Waste pickers with respiratory problems

### **Gastrointestinal problem**

The majority of the participants (165) did not have gastrointestinal problems.

### **Vision and hearing problems**

From the study, 68% of the participants had no vision problem and 89% had no hearing problems. It was worth noting that the majority of those who reported vision and hearing problems were people over 50 years of age.

### **Causes of and beliefs about health problems**

From the study, the highest percentage of 43% believed that their illnesses were work related while 34% of waste pickers revealed that they were not ill at all and did not suffer from any of the illnesses that the researcher asked. About 19% of the participants believed their illnesses were not work related. The minority of 4% reported that they did not know if their illnesses were work related.

## **CONCLUSION**

Waste picking is an informal sector activity that has not yet attracted much official attention. Waste pickers are aware of the dangers at the landfill site as the majority of them consider a landfill site to be an unsafe working place and yet still work in serious harsh conditions to support their families. Despite their tough working conditions, waste pickers continue to work daily in search of recyclable materials that will generate earnings from which they can afford to pay for the education of their children.

Waste pickers risk their health and injuries in the hope of being able to survive their adverse state of poverty. The health status of waste pickers is of great concern for public health reasons as they travel from their homes and communities on a daily basis, coming back from the landfill sites with the risk of spreading illnesses to their families.

There are still challenges that waste pickers experience at the landfill sites that need serious attention from all stakeholders. Waste management at the landfill sites should be addressed with a critical eye. Although waste pickers are self-employed, their well-being is of serious concern to waste management and the community at large.

## **REFERENCES**

- [1] Ketlogetswe C, Mothudi TH. Botswana's environmental policy on recycling. *Resources, Conservation and Recycling*, **2005**.
- [2] Karani P, Jewasikiewitz SM. Waste management and sustainable development in South Africa. *Environment, Development and Sustainability*, **2007**, 9: 163-185.
- [3] Godfrey L, Oelofse S. A systems approach to waste governance, unpacking the challenge facing local government. Golder Associates (U.K) Ltd. managing organisation for waste, **2008**.
- [4] Kum V, Sharp A, Harnpornchai V. Improving the solid waste management in Phnom Perth city: A strategic approach. *Waste Management*, **2005**, 25: 626-637.
- [5] Koshy L, Paris P, Ling S, Jones T. Bio reactivity of leachate from municipal solid waste landfills - Assessment of toxicity. *Sci Total Environ*, **2007**, 384: 171-181.

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- [6] Pilusa J, Muzenda E. Solid waste management in West Rand District, Gauteng, South Africa, **2013**.
- [7] Chofqi A, Younsi A, Lhadi EK, Mania J, Mudry J, et al. Environmental impact of an urban landfill on a coastal aquifer (El Jadida, Morocco). Laboratory of Environmental Techniques and Geosciences, Faculty of Science, El Jadida, Morocco. *J Afr Earth Sci*, **2004**, 39: 509-516.
- [8] Mwiganga M, Kansime F. The impact of Mpererwe landfill in Kampala-Uganda on the surrounding environment. Institute of Environment and Natural Resources, Makerere University, Kampala Uganda. *Phys Chem Earth*, **2005**, 30: 744-750.
- [9] Chattopadhyay S, Dutta A, Ray S. Municipal solid waste management in Kolkata, India. *Rev Waste Manag*, **2008**, 29: 1449-1458.
- [10] Noel C. Solid waste workers and livelihood strategies in Greater Port-au-Prince, Haiti. University of the West Indies, Institute for Sustainable Development, Environmental Management Unit, 13 Gibraltar Camp Way, Mona Campus, Kingston, Jamaica, **2010**.
- [11] Gill K. Interlinked contracts and social power: Patronage and exploitation in India's waste recovery market. *J Dev Stud*, **2007**, 43: 1448-1474.
- [12] Medina M. The world's scavengers: Salvaging for sustainable consumption and production. Lanham: Alta Mira Press, **2007**.
- [13] City of Tshwane. Revised Integrated Development Plan, **2013**.
- [14] Leedy PD, Ormrod JE. Practical Research, Planning and design, New Jersey: Pearson Education, Inc., **2010**.
- [15] Schenck CJ, Blaauw PF. Living on what others throw away: An exploration of the socioeconomic circumstances of people selling recyclable waste. *Soc Work Pract Res*, **2011**, 23: 135-153.
- [16] Viljoen JMM. Economic and social aspects of street waste pickers in South Africa. Unpublished PhD-thesis. Faculty of Economic and Financial Sciences. University of Johannesburg, South Africa, **2014**.
- [17] Medina M. Scavenger cooperatives in Asia and Latin America. *Resources, Conservation and Recycling*, **2000**, 31: 51-69.
- [18] Tevera DS. Dump scavenging in Gaborone, Botswana. *Anachronism or Refuge Occupation of the Poor Geografiska Annaler*, **1994**, 76: 21-32.
- [19] Samson M. Organising reclaimers in Tshwane, South Africa - Lessons from top down and bottom up experiences. Cambridge, USA, **2010**.
- [20] Nguyen H, Chalin C, Lam T, Maclaren V. Health and social needs of waste pickers in Vietnam. Research paper WASTE-ECON program in Southeast Asia, **2003**.
- [21] Oyelola OT, Babatunde AI, Abiodun AA, Popoola EO. Occupational health hazard associated with dumpsite scavengers and highway workers in Lagos metropolis. *J Environ Issues*, **2011**, 1: 13-21.
- [22] Gutberlet J, Baeder AM. Informal recycling and occupational health in Santo Andre, Brazil. *Int J Environ Health*, **2008**, 18: 1-15.
- [23] Gwisai RD, Areola O, Segosebe E. Respiratory and occupational health problems of scavengers and landfill employees in a municipal landfill site in Lobatse, Botswana. *Journal of Sustainable Development in Africa*, **2014**, 16: 37-55.