

Factors Contributing to Poor Environmental Hygiene in Kehemu location, Rundu, Namibia

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Received: May 19, 2019 Accepted: June 10, 2019 Online Published: June 25, 2019

doi:10.5539/gjhs.v11n7p176

URL: <https://doi.org/10.5539/gjhs.v11n7p176>

Abstract

Solid waste management in Rundu, Namibia, is a major challenge, resulting in significant environmental health hazards. The purpose of this study was therefore to identify and describe the factors contributing to poor environmental hygiene specifically in Kehemu location in Rundu, while the objectives were to explore the factors contributing to poor environmental hygiene in the area. A qualitative approach was employed comprising an explorative and descriptive design. The research population for this particular study consisted of residents of Kehemu location and a sample was drawn from this population using purposive sampling. Data were collected from focus group discussions conducted with 15 (fifteen) residents. The transcribed interviews and narratives from the research notes were organised into codes, main themes and sub-themes. The results from this study revealed, among other things, that the methods used by most households for disposing of waste included digging holes, burning the waste and dumping it in open areas. In addition, factors contributing to poor environmental hygiene in Kehemu location include a lack of dumping sites, dustbins and refuse removal services. The findings of this study call for well-articulated actions to address the factors identified as being associated with poor environmental hygiene in Kehemu. The study recommends that the town council should empower the community by providing dustbins, initiating clean-up campaigns and providing education and awareness-raising as some measures for curbing problems related to environmental health.

Keywords: factors, environment, hygiene, solid waste, poor

1. Introduction

Solid waste, according to Oelofse and Godfrey (2008, p. 244), is defined as “any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities”. ADemir & Araujo (2012, p. 2) defines solid waste as that which is produced after wastewater treatment and its characteristics are influenced by anthropogenic activities. In view of the fact that the appearance of the environment is very important for all cities, dumped waste causes the environment to become aesthetically unattractive.

In addition, many other serious problems may be caused – heaps of waste can become mosquito breeding areas and hence result in outbreaks of diseases like malaria. Waste which has been blown into storm water drains may cause serious blockages and can pollute the water in the rivers that supply the municipality with drinking water. Poor waste management thus impacts on both the community and the environment, having negative effects in terms of economic issues, education, corruption, service delivery, poverty, crime and unemployment. Waste which is illegally (or legally) dumped has undesirable and/or superfluous by-products, both from what it emits and from its residue. Uncollected waste may thus have an adverse effect on the environment and on people’s lives. Moreover, illegal dumping sites may create problems such as contaminated air, or suitable breeding habitats for mosquitoes.

Throughout history, human advancement has been intrinsically linked to the management of solid waste due to its effect on both public and environmental health. Solid waste management (SWM) has a long and convoluted history (Nathanson, 2015). It is also important to deal with this issue directly because if left unmanaged, waste can have detrimental effects on both environmental and human health (Narayana, 2009). Globally, the production of

waste has practically doubled over the past ten years and is expected to reach 2.5 billion tons per year in 2025 as a result of the combined effect of urban development and changes in consumption patterns (Périou, 2012).

An ideal waste disposal site must be adequately fenced off to prevent illegal entry and windblown litter and must at all times be maintained in a manner that prevents the breeding of flies, as well as other public health risks. In addition, no waste may be burnt either on public or private property or at a waste disposal site. Finally, local authorities must regulate the transportation of the different waste streams to the waste disposal site in accordance with the applicable laws to prevent environmental pollution and public health risks (Public and Environmental Health Act, 2015).

There are a number of waste management principles that contribute to reducing waste volumes. However, it is questionable whether their value has been realised. And, if so, it is questioned to whether they are being implemented in Namibia, particularly in the town of Rundu, where this research was conducted, because their solid waste management systems seem to be ineffective when it comes to addressing solid waste.

Waste management is one of the important aspects of environmental management in Namibia (EMA, 2007). Currently, Namibia is ranked 10th among the cleanest countries in Africa (Windhoek), down from the number one position which it held for a number of years. Despite the efforts of various town councils in Namibia to keep it the cleanest country on the African continent and beyond, it appears that some towns in Namibia, including Rundu, are failing to manage and dispose of their waste in accordance with waste management policy. Failure to remove waste from undesignated dumping sites may result in diseases such as malaria, cholera and the like. This study sought to answer the following research question: What are the factors contributing to poor environmental hygiene in Kehemu location in the town of Rundu in Namibia?

2. Goals and Objectives

The purpose of this study was to explore the factors contributing to poor environmental hygiene in Kehemu location in Rundu, Namibia, while the objectives included describing these factors in detail.

3. Research Design and Methods

3.1 Design

A cross-sectional qualitative and explorative design was employed Brink, Van der Walt, and Van Rensburg, (2018)

3.2 Study Population

The research population for this particular study was the residents living in Kehemu location in Rundu, Namibia.

3.3 Inclusion and Exclusion Criteria

All residents of Kehemu location, Rundu, who were willing to participate in this study, were included in this study, while those who were unwilling were excluded.

3.4 Sampling and Sample Size

In qualitative studies the size of a sample is guided by the purpose of the inquiry. Therefore, in this study there was no specification of the sample size, with data saturation being determined by the sample size. Data saturation was reached with (15) fifteen participants in two focus group discussion. Each focus group discussion lasted for 90 minutes. Maree (2016) describes purposive sampling as a strategy that is used in qualitative studies whereby participants are grouped according to predetermined criteria that are relevant to a particular research question. Purposive sampling was used to select the participants for this study. The number of participants recruited was based on data saturation, and data collection was stopped when no new information emerged from the second focus group discussion. A total of 15 residents of Kehemu location eligible for participating in the study were included in the study. The participants were all residences of Kehemu location in Rundu of Kavango East Region.

3.5 Data Collection Tool

In this study, focus group discussions was used as a primary source of data collection with focus group discussion guide were conducted to enable participants to express their views on factors contributing to poor environmental hygiene in Kehemu location. This data collection method was used as it is considered to be relevant for use when the researcher seeks to learn about people's feelings, thoughts and experiences (Maree, 2016). One central question was asked, "Could you kindly describe your views related to factors contributing to poor environmental hygiene in Kehemu location?" This question was followed by clarity seeking questions to probe after the first response of each participant.

3.6 Data Collection Methods

The researcher conducted the focus group discussions with residents of Kehemu location in Rundu, Namibia. Triangulation was done through the use field notes which were captured from non-verbal communication and voice recorder of all the focus group discussions sessions.

3.6 Data Analysis

In this study, focus group discussions were structured in accordance with a focus group discussion guide. A thematic analysis method was employed to analyse the data.

4. Ethical Considerations

Permission to conduct the research was obtained from the Rundu town council and the Ministry of Health and Social Services. The subject of hygiene is considered a sensitive issue as it has the potential to demean human dignity and, as such, participants in this study were assured of confidentiality and anonymity. They were not obliged to divulge their names or personal particulars except for their gender, age and educational background. They were also assured that their identities would not be revealed. To ensure this, codes were used in such a way that participants would remain anonymous. Accordingly, the researcher used number codes (P1 to P15) to identify the participants. Participants signed an informed consent form prior to participation. They were also assured that research material and all documents that contained their responses would be safeguarded and would only be accessible to the researcher.

5. Results

5.1 Socio-Demographic Description of Study Participants

Participants were all residents of Kehemu location in the town of Rundu in Namibia. All participants were under the age of 61 years. The educational level of the participants varied with the majority having attained Grade 12, although five had received no education at all. The majority of the participants were employed.

Table 1. Characteristics of Participants

Age	Total
18–30	6
31–40	3
41–50	2
51–60	2
61 and Above	1
Sex	
Male	7
Female	8
Employment status	
Employed	4
Unemployed	11
Education level	
Grade 1–7	0
Grade 8–12	10
Tertiary education	0
No education	5

Table 2. Themes and Sub-themes of Data Analysis

Themes	Sub-themes
5.1 Contributing factors to poor environmental hygiene	5.1.1 Lack of dumping sites
	5.1.2 Lack of dustbins
	5.1.3 Lack of refuse removal services
5.2 Management of waste	None
5.3 Effects of poor environmental hygiene	5.3.1 Health-related effects (diseases and injuries)
	5.3.2 Image-related factors
5.4 Mechanism for improvement	5.4.1 Keeping the environment clean
	5.4.2 Educating the public

5.2 Contributing Factors to Poor Environmental Hygiene

This theme reflects the factors that the participants perceived contributed to poor environmental hygiene in Kehemu location, Rundu. The theme expresses factors that include the lack of dumping sites, lack of dustbins and lack of refuse removal services.

5.2.1 Lack of Dumping Sites

Participants revealed that they do not have a dumping site where they can dispose of their waste. They also reported that they do not have a choice but to dispose of their waste on any open areas they find, since they cannot access places where they are allowed to dump their waste. This was highlighted by a few extracts from the interviews which are included below:

I don't see any place where they indicate where we can dump our rubbish; I don't see such things here, so it becomes a problem when we have to dispose the wastes. The only places where I can put my rubbish is any open space that I can find because I don't have a choice (P3G1).

... not everyone can afford transport where they can go and dispose their waste, so in a town set up like this, there should be already something in process which guides people on how to dispose their waste (P1G1).

5.2.2 Lack of Dustbins

Some participants revealed that they do not own dustbins at home. They believe that this is one of the factors contributing to poor environmental hygiene in their location.

The fact is that we don't have dustbins in our house, if we did have dustbin in our house we could not dump that side (pointing to the tarred road). If we had dustbins, then the place will be clean (P1G2).

5.2.3 Lack of Refuse Removal Services

Some participants in this study reported that even if they try and bring the waste together, put it into big plastic bags and put the bags outside their gates, the town council does not come and pick them up; they just stay there and thus residents are left with no choice but to go and dump them in open areas.

I don't see any places where they say put your rubbish here, at a certain period of time we are going to pick it up at intervals. I don't see such things here in town. It becomes a problem on how to dispose our waste. The only places where I can put my rubbish is any open space that I can find (P1G1).

5.3 Theme 2: Management of Waste

This theme reflects the ways in which the residents of Kehemu are managing their waste. Most participants stated that they dig holes in their yards in order to dispose of their waste there. Some revealed that they burnt the waste as a mean of getting rid of it.

We cannot live with waste in our houses because everyone wants that their yard has to be clean, so for us to sit with rubbish is not nice, so we dig holes and put the rubbish in and if the hole is full, we either burn the rubbish or close it up but now our yards are very small, we cannot dig anymore (P5G2).

The common practice is digging holes within the yards and then burning the rubbish in a sense that they become minimal (P7G1).

5.4 Effects of Poor Environmental Hygiene

This theme indicates the effects that are associated with poor environmental hygiene. The theme is divided into two sub-themes, namely, health-related effects and image-related factors.

5.4.1 Health-Related Effects

Some participants raised concerns that the poor environmental hygiene is contributing negatively to their health, with some indicating that the waste near their houses gives off a foul smell thus attracting flies to their homes.

This rubbish is bringing a lot of problems to us. There are people who don't have toilets in their houses and they just go and do their stuff that side (pointing at the waste) (P4G2).

It's really not nice to our health, some of us are already old and we are sick, with this smell its contributing to our health (P5G2).

To us who are close to the rubbish, we are the most affected ones. It's really affecting us in terms of our health. We have street kids and places like that attract street kids because in their mind they think where there is a lot of rubbish maybe I might find that bread, I might find that apple which is not healthy (P2G2).

5.4.2 Image-Related Factors

Some participants raised concerns about the image of their town. They stated that tourists who come and visit will form a poor image not only of Rundu but also of Namibia in general. They worry that the tourists who visit Rundu will take pictures of the heaps of waste that are lying next to the road and go and show others in their countries, which will discourage them from coming to visit.

If we look closely, this is a street full of institutions. We have RVTC (Rundu Vocational Training Centre), we have gender, youth centre and then UNAM (University of Namibia) and for sure once the tourists get in the region it's obvious that they would want to see where Rundu Campus is, where RVTC is and they are all in the same line. The tourists are the ones contributing to our economy. It's so disappointing getting to a place and it is so dirty like this (P1G2).

5.5 Mechanisms for Improvement

This theme reflects the mechanisms the participants suggested introducing for the residents in order to improve the environmental hygiene. The theme is divided into two sub-themes, namely, keeping the environment clean and educating the public.

5.5.1 Keeping the Environment Clean

Participants in this study stated that they are doing their best to contain the waste. They stated that they have done all they can and that they have run out of options. Now they are putting it in the hands of the town council to do its part.

As residents, we have major roles as well, that is not to throw anywhere and to make sure that whatever we know may litter the area should be kept under control in terms of you put them in the dustbin, make sure the dustbin is closed so that even if dogs roam around they cannot remove them (P1G1).

The town council should come and clean up the place and bring dustbins. They should also encourage people to try their best to have toilets at their houses (P2G2).

5.5.2 Educating the Public

Some participants stated that educating the people on how to handle waste could help reduce the illegal dumping.

I do educate the kids around me on how to handle waste and avoid playing with refuse, so all in all we try our level best; I try my level best to contain the waste instead of letting it be scattered all over (P7G1).

5.6 Trustworthiness

The trustworthiness of this study was ensured by using the criteria of Lincoln and Guba (1985), namely, credibility, transferability, dependability, and conformability.

6. Discussion

6.1 Lack of Dumping Sites

Participants in this study revealed the lack of designated dumping sites as one of the reasons for illegal dumping. Illegal dumping generally happens when people are not provided with refuse removal services; hence they are forced to dump their waste at the closest convenient site. This is in agreement with a study by Asase, Yanful, Mensah,

Stanford, and Amponsat (2009), who noted that there was a lack of proper disposal sites and landfills in the country.

6.2 Lack of Dustbins

Participants in this study revealed that a lack of dustbins is one of the major factors contributing to poor environmental hygiene. This finding is in contrast to the findings of a study done by Hazra (2009), who found that the poor condition of containers and inadequate maintenance and replacement of worn-out collection vehicles contributed to behaviours such as littering and illegal dumping by citizens, who felt they could not properly dispose of trash because rubbish bins and waste services were not properly maintained.

6.3 Lack of Refuse Removal

Participants in this study revealed that lack of refuse removal services was one of the factors contributing to poor environmental hygiene. This is in agreement with a study conducted in Palestine by Al-Khatib (2010), who stated that, on average, up to 50 per cent of residents in the urban areas of low and middle-income countries lack collection services. There are limited opportunities for the development of sustainable solid waste management systems, as government budgets are limited and proper waste collection is neglected.

This study revealed that one of the current methods participants use to remove waste from their homes is to bury it in their yards. Some reported that they burn the waste or dispose of it in open areas. This concurs with the findings of a study done in Ghana by Patrick (2014), who revealed that waste is burnt in pits as a way of getting rid of it. In addition, some people dump waste in random locations, or dispose of it in open areas without any further management.

Participants in this study revealed that the waste is causing serious problems for them, especially with regard to their health. They revealed that the elderly and young children in particular are suffering from certain diseases that they suspect may be caused by lack of waste management. This is in agreement with the findings of a study done in Nairobi by Troschinetz and Mihelcic (2009), who state that residents living close to the dumpsite are exposed to environmental and disease risks. In their study it was found that waste disposal sites were in most cases located in environmentally sensitive low-lying areas such as wetlands, forest edges or close to bodies of water.

6.4 Image-related Factors

Participants in this study were worried about the image of their town. They were aware that waste makes an environment look unattractive. This concurs with a study done by Masange (2013) who states that waste causes the environment to be untidy and unattractive and may place people's lives at risk. He further states that filthy habits are evident when people thoughtlessly make a mess of public utilities, office premises, streets, parks and neighbourhoods.

6.5 Keeping the Environment Clean

Participants in this study were aware of the role they play in keeping the environment clean. By contrast, in a study conducted in India (Milea, 2009), researchers found that although the majority of respondents perceived garbage to be a big problem in Delhi, there was little knowledge on the ways one could contribute to solving it. A sense of responsibility for one's waste was found to be the major factor determining littering and waste separation, but waste minimisation was mainly associated with income and not perceived to be part of the waste.

6.6 Educating the Public

Most participants did not dwell on educating the public as a solution to improving poor environmental hygiene. In a study conducted by Marshall and Farahbakhsh (2013), it was found that issues related to public acceptance, changing value systems, public participation in planning and implementation stages, and changes in waste behaviour are as important as the technical and economic aspects of waste management. Marshall maintains that adequate public participation should involve stakeholders from the outset, thus providing a creative forum for the public to discuss issues, identify key actors, generate possible solutions and alternatives, implement part of the selected solutions and participate in the monitoring and evaluation of solutions.

7. Conclusions

The findings of this study lead to the conclusion that a lack of dumping sites, a lack of dustbins and a lack of refuse removal services are the major contributory factors to poor environmental hygiene. The heaps of refuse that accumulate in the surroundings have the potential to produce foul odours which attract flies, which in turn harbour major organisms that spread harmful germs. The results of the study show that poor environmental hygiene also has the potential to damage the image of the town. On the basis of these results, a call should be made for

well-articulated plans and action to address the factors identified as major contributors.

8. Recommendations

Based on the study findings, the following recommendations are made:

- It was reported in this study that a lack of dustbins is one of the major factors contributing to poor environmental hygiene. It is therefore recommended that Rundu town council should increase the number and optimise the distribution of litterbins on the streets and in other public places as a measure to discourage people from littering.
- It was reported in this study that a lack of designated dumping sites is one of the reasons for illegal dumping. It recommended that the town council should create more dumping sites in accordance with the environmental needs, bearing in mind the importance of sustainable waste management systems.
- Appropriate distribution of responsibilities, authority and revenue between national, regional and local governments must be determined so that waste management programmes can succeed and be effective.
- Enactment and enforcement of policies and legislation will serve as useful strategies for improving solid waste management, as poor management in this regard is associated with weak policy enforcement and implementation.

9. Study Delimitations and Limitations

The study was delimited to information given by residents of Kehemu location in Rundu. Apart from English, the other language used to collect the data was Rukwangali, and responses given in this language were later translated into English. Accordingly, there is always a possibility that some of the original ideas of the participants were lost during the translation process.

Acknowledgements

We thank all the participants who took the time to participate in the study; without their participation this study would not have been possible. We also thank the Ministry of Health and Social Services and Rundu Town Council for granting us the permission to conduct research in Rundu.

Competing Interest Statement

The authors declare that there is no conflict of interest.

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