

Exploring disposable diaper usage and disposal practices in rural areas

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KEY FINDINGS

The research study contributes valuable insight into diaper usage and disposal behaviours across eight villages in the Kruger to Canyons (K2C) Biosphere Region, which straddles the Limpopo and Mpumalanga Provinces in South Africa. Respondents were predominantly female caregivers between the ages of 20-39 years, 71% of them being unemployed and 97% being government grant dependent, with most households receiving more than one grant. In addition to their lower socio-economic status, respondents lived with little to no waste management services, poor access to running water and decaying municipal infrastructure.

Results from the survey show that 99% of respondents used disposable diapers which they view as affordable and which are paid from the grants received. This is both surprising and unsurprising. It is surprising because diapers are a relatively large expense per household, consuming a significant portion of grant income necessary for disposable items. However, the context of poor service delivery, as well as lack of water and electricity, makes the adoption of reusable alternatives, such as cloth diapers, all but impossible. Moreover, without reliable waste management services, respondents are dependent on a product which they struggle to dispose of sanitarily. The study reveals the resultant lengths to which individuals within the study area must go in order to manage this highly complex and problematised product by burying, burning or dumping it in the veld and watercourses, which, as the LCA suggests, has a multitude of detrimental effects on the health of the residents, their livestock, wildlife, water and the environment in general. Conservatively calculated, each of the sampled 1 576 households interviewed has at least one baby using 4.47 diapers per day which results in a minimum of 7 045 used diapers being dumped in rivers or on land, burnt or buried daily by the participants.

We cannot agree more with Vidal's statement.

"Disposable diapers made from plastic components are a godsend for parents but a nightmare for the planet." (Vidal, 2019:1)

INTRODUCTION

Globally, single-use disposable diapers are one of the biggest contributors to plastic waste and one of the most serious threats to human health, animals and the environment. Developing countries experience the additional threat of high birth rates, urbanisation and insufficient (or no)

solid waste management in rural areas. The latter problem applies particularly to African countries. This forces specifically rural communities to find alternative methods of disposal, including dumping on land and in watercourses, burial and open burning, as they also often have limited access to clean water and sanitation – which

would allow for washing reusable cloth diapers. Very little scientific literature is available regarding the impact of dumped diapers on humans, animals and the environment, as well as on sustainable solutions relevant to and appropriate for South African and African rural communities.

METHODOLOGY

The research aimed to explore diaper usage and disposal practices in unserved rural areas and was conducted in the Kruger to Canyons Biosphere Region (K2C BR) which straddles both the Limpopo and Mpumalanga Provinces in South Africa. The area is a biodiversity hotspot that contains many different ecosystems which support a multitude of rare and endemic, but threatened, species. Additionally, the biosphere includes two of South Africa's key tourism sites (the Kruger National Park and the Blyde River Canyon), as well as a leading international floral hotspot, the Wolkberg Region.

To gather the data an explanatory sequential mixed-methods approach with quantitative and qualitative data collection methods was used. A total of 1576 quantitative baseline questionnaires were completed to determine the usage and disposal practices of the residents in K2C, followed by the community's mapping of the dumping areas, focus group discussions, GIS mapping of dumped diapers over a period of six months, and member-checking sessions with the communities. The dumped diapers were mapped with the use of 'citizen science'. Environmental monitors working in the villages were trained to map the dumped diapers they might find in their respective villages.

A Life Cycle Assessment (LCA) was completed using data from the questionnaire and from a local manufacturer, as well as secondary data from literature and the Ecoinvent v3.9 database.

MAIN RESULTS

The research study contributes valuable insight into diaper use and disposal behaviours across eight villages in the K2C BR. Respondents were predominantly female caregivers between the ages of 20-39 years, of whom 71% were unemployed and received government grants. Most households received more than one grant. In

addition to their lower socio-economic status, respondents lived with little to no waste management services, poor access to running water and decaying municipal infrastructure.

Results from the survey show that 99% of respondents used on average 4.47 disposable diapers per child per day. This is both surprising and unsurprising. It is surprising because diapers are a relatively large expense per household, consuming a significant portion of grant income necessary for disposable items. However, the context of poor service delivery, as well as lack of water and electricity, makes the adoption of reusable alternatives, such as cloth diapers, all but impossible. Moreover, without reliable waste management services, respondents are forced to depend on a product which they struggle to dispose of sanitarily. The study reveals the resultant lengths to which individuals within the study area must go in order to manage this highly complex and problematised product by burying, burning or dumping it in the veld and watercourses as shown in the photos below.



Figure 1: Dumped diapers in the veld. Source: Environmental Monitor

Conservatively calculated, each of the sampled 1576 households interviewed has at least one baby using 4.47 diapers per day. A minimum of 7 045 used diapers are being generated and dumped in the rivers, burnt or buried daily by the participants.

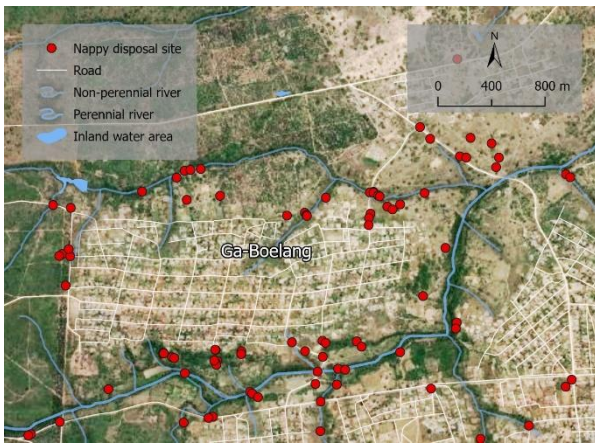


Figure 2: Map of the dumped diapers close to the rivers in one of the 8 villages in the study.

The LCA study suggests that the practice of dumping, burning and burying of disposable diapers has a multitude of detrimental effects on the health of the residents, their livestock, wildlife, water and the environment in general. Furthermore, these disposal practices make the greatest contribution to human and ecotoxicity.

The eight villages studied do not receive waste management services from their respective municipalities and, therefore, form part of those South African communities who have to deal with their waste themselves. One of the major reasons provided by the respective municipalities for why they do not deliver services is that the communities cannot pay for service delivery. Consequently, lower-income communities, deprived of waste service delivery, are forced to manage their waste in an environmentally inappropriate manner.

These results speak directly to the manner in which compounding service delivery failures, including solid waste management, complicate the lives of lower-income communities – as well as of underserved communities more generally. Thus, this body of work speaks to the ways in which inappropriate or insufficient waste management delivered to lower-income areas, compounded by poor state support and low socio-economic conditions, leave communities with few pathways to enhance their well-being.

In view of this, we need to emphasise the consequences of denying essential public services,

such as waste management, to low-income communities, and we believe it is time for the South African government to acknowledge that it neglects the majority of predominantly poor communities to whom they are supposed to render vital services. Not rendering appropriate services to low-income areas exacerbates their already taxing living conditions, intensifies inequalities and contributes to environmental degradation - including in ecologically sensitive spaces, such as K2C. The challenge should be placed at the door of governments of developing countries, such as South Africa, to develop innovative service delivery and fiscal models (with their constituents) such that the well-being of all communities and their environment can be supported adequately.

The complex developmental problems that South Africa faces cannot be solved with local municipalities operating in isolation. Public-private partnerships can assist to improve knowledge, skills, management, maintenance and implementation of service delivery. Close partnerships with Non-Governmental Organisations, such as K2C, are strongly encouraged as such NGOs operate closely with communities.

The results further highlight that disposable diapers are designed and produced successfully. Amongst several reasons given by the respondents for using disposable diapers were their convenience for the caregiver/mother, being perceived as providing comfort for the baby, and being fashionable and modern. Mothers and caregivers indicated that they would **not**, even under more favourable circumstances, easily turn back to using reusable or cloth diapers. The Department of Fisheries, Forestry and the Environment should urgently develop Extended Producer Responsibility (EPR) regulations for disposable diapers so that the producers, importers and brand owners take responsibility for the complex products they design. Producers should make a contribution towards the development of alternative management and

preferable recycling options. More importantly, producers should be held accountable for the entire lifecycle of their products.

In summary: Although disposable diapers are convenient, the usage and disposal practices of these diapers in the study area are creating significant social and environmental problems, affecting humans and animals, and are posing a serious threat to the biodiversity. The complexity of the problem should be systemically addressed through continuous interdisciplinary and transdisciplinary research and relevant policies and regulations. Platforms should be created on which information can be shared, and solutions generated, to improve the health and well-being of the communities and their environment. In addition, improved access to water, sanitation, hygiene and waste management services at the community level is regarded as a step towards a more sustainable future - and this should be undertaken in tandem with improved access to

education, healthcare and an economy that would support a growing society.

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Reference

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