

Potential and acceptance of greywater for non-potable reuse at Zandspruit informal settlement in Johannesburg

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Abstract

This study explores the potential of greywater generation and its acceptance in the Zandspruit informal settlement in South Africa. The research was conducted from February 1 to March 29, 2019, through face-to-face interviews using a prewritten questionnaire. Participants were randomly chosen who lived in the community. Data were compiled and analysed using Microsoft Excel and IBM SPSS 25. The majority (71%) of the participants in this study were women (N=39). Participants aged 26 to 35 had a high representation (33%) in comparison to other age groups. Respondents aged 70 and over were the least (5%). About 81% of the participants had at least attained elementary education whilst 67% were employed. The findings of this study reveal a significant potential for greywater generation in Zandspruit, with daily water consumption ranging from 10 to 125 Lpcd. The average water consumption values for various purposes were 13.1, 5.0, 4.0, and 3.5 Lpcd for bathing, laundry, washing basins, and household cleaning, respectively. Greywater generation quantities ranged from 8.5 to 56 Lpcd, with a return factor between 0.27 and 0.95. The primary source of greywater was bathing, followed by laundry, dishwashing, and household cleaning. Respondents were willing to reuse treated greywater for specific purposes including toilet flushing (98%), vegetable irrigation (96%), laundry (80%), personal hygiene (73%), and washing basins (60%). Age and gender positively influenced the acceptance of greywater reuse, possibly due to community-level gender roles. Greywater reuse in urban slums has the potential to supplement potable water demand at the household level.

Keywords: Greywater generation, greywater reuse, informal settlements, public perceptions, user acceptability