ABSTRACT

Background

Pit latrine operational management and sludge accumulation rate, presents a challenging sanitation problem in low-income urban settlements. However, these challenges have been under-researched. This study was carried out between December 2014 and September 2015 in Nakuru, Kenya. Its objectives were to determine pit latrine management activities and content accumulation rates.

Methods

A longitudinal design was used to study 100 households and their respective pit latrines. Sludge accumulation in 73 pit latrines was monitored for 10 months using a digital laser range-finder. Data analysis included normality testing and descriptive statistics. Differences in fill up across and within the study areas were analysed using one-way analysis of variance and the Fisher's Exact Test used to determine areas with significant differences.

Results

Sixty-one percent of the pit latrines were used as solid waste disposal points while 45% of the respondents had no hygiene awareness. The annual fill-up rate and individual sludge contribution were $0.87 \pm 0.20\ m^3$ and $41.82\ l$ respectively. The sludge accumulation rates across the study areas had statistically significant mean differences ($p < 0.05$).

Conclusion

Operational management and design affect the fill-up rates and post fill-up management operations. This study argues for a need to link information and awareness to users, construction artisans, property owners and local authorities on appropriate vault volumes and management practices. Linking the variables would ensure efficient sanitation service delivery and public health protection.