

ABSTRACT

Globally, the amount of solid waste (SW) generated has increased proportionately with urbanization. Estimating SW generation in households is vital for sustainable SW management, however, this has not been easy due to inadequate SW generation data. Inadequate time-series data on SW generation in households in Kenya underscores the need for a study utilizing household socio-economic and demographic characteristics. Hardly any studies have been done on estimation of SW generation in households in Kisumu city. Therefore, the purpose of this study was to analyze socio-economic and demographic determinants for estimating SW generation in households in Kisumu city. The objectives were to: analyze the relationship between household size, household monthly income, household monthly expenditure on food and age of the household head on the amount of SW generated; determine the relationship between education level, employment sector and gender on physical components of SW generated; establish the association between socio-economic group and volume of physical components of SW generated and determine the appropriate socio-economic and demographic determinants for predicting SW generation. A cross-sectional descriptive research design was used. Households were covered as sampling units from a total population of 8651 households. Estates were categorized into high, middle and low socio-economic groups and a minimum sample size of 368 household heads interviewed. Purposive sampling was used to identify the key informants. Primary data were collected through: questionnaires, direct waste analysis, key informant interviews and observation. Pearson product moment correlation was used to establish the relationship between household size, household monthly expenditure on food, household monthly income, age of the household head and amount of SW generated. Chi-square test of independence was used to establish the association between gender, education level, employment sector and physical components of SW generated. One way ANOVA was used to establish the association between socio-economic group and volume of physical components of SW generated while multiple linear regression was used to predict SW generation. The study revealed that the amount of SW generated was strongly and positively associated with household size, monthly expenditure on food, monthly income and age of the household head ($r > 0.897$, $p < 0.05$) in the three socio economic groups. The Chi-Square results ($p < 0.05$) showed that the interaction between gender and physical components of SW generated was significant in the three socio-economic groups. Results of the one way ANOVA showed that there were significant differences between volume of physical components of SW generated across socio-economic groups [$F(2,6) = 6.020285$, $P = 0.036788$] significant at $p < 0.05$. Household size, monthly income, expenditure on food and age of the household head explained over 97% ($R^2 = 0.97$) of the variations in SW generation. The study concluded that in Kisumu city, socio-economic and demographic determinants can be used to estimate SW generated in households. The study recommended that socio-economic and demographic determinants should be considered in design of integrated SW management programs, solid waste collection and transfer, formal waste recovery and recycling, composting and sanitary landfills.