Abstract

This study aimed to quantify the burden of childhood diarrhea morbidity and mortality of the under five children in Nairobi city using household data and hospital records. The main objective of this study was to estimate the diarrhea disease burden of aged less than five years associated with Water, sanitation and hygiene in Nairobi using available mortality and morbidity information. The study used a cross-sectional, non-interventional approach. For estimating childhood diarrhea disease burden, the study area was categorized into four exposure residential environs differentiated by WASH and SES characteristics. The delineation gave four residential environs namely Informal settlement Low Income Residential Areas (ISLI), High Density Low income residential Area (HDLI), Medium Density High income residential Area (MDHI) and Light Density High income residential Area (LDHI). The parameters considered included access to improved water and sanitation and diarrhea (case fatality, incidence rate, incidence duration, and prevalence) so as to calculate Disability Adjusted life Years (DALYs). Also household hygiene knowledge and practice were assessed, sanitary inspections conducted and water samples collected that were analysed for total and faecal coliform counts, turbidity and conductivity. Data obtained were subjected to relevant statistical tools including descriptive statistics, relative risk estimate, regression analysis and multivariate methods. The results of the study show ISLI and HDLI environs were receiving significantly low and unreliable amounts of water (20lcd/person/day) as well as inadequate sanitary facilities. The results also revealed that the microbiological quality of water in ISLI and HDLI residential environs was generally poor due to poor water handling practices and poor sanitary conditions within the surroundings. Overall, household water storage showed a significantly higher contamination (33.2%) than household tap water supplies (4.7%). These factors influence a higher childhood diarrhea burden observed in this study for diarrhea the study identified a distinct pattern of childhood morbidity. The annual disability adjusted life years for children under the age of five years in Nairobi study area were approximately 106 DALYS/1000 person years (ISLI=223; HDLI=98; MDHI=56 and LDHI=47). This means that children loose approximately 10% of their quality life to diarrhea with ISLI and HDLI losing 22.3% and 9.8% respectively compared to 5.6 and 4.7 per cent for MDHI and LDHI respectively. The diarrhea patterns observed emphasised the role of socioeconomic, educational, water supply and sanitation factors on diarrhea morbidity and mortality in Nairobi study area. Some of the most important factors that contributed to diarrhea morbidity were parental education, household water consumption rates household income and access to sanitation facilities. The optimal WASH and SES conditions in this study were for MDHI. There is need therefore to improve children’s living conditions to match MDHI residential environs for children’s diarrhea and health outcomes to be significantly reduced. To this end, multi-stakeholder involvement and strengthening of the institutional mechanism responsible for providing water and sanitation in the city will be key to providing improved access to water and sanitation in the city of Nairobi especially in the ISLI and HDLI residential areas of Nairobi. This should be enhanced by legislating mandatory construction of improved ventilated pit latrines, and provide health promotions on the significance of household hygiene among others.