Exploring attributes of urban food environments using a GIS approach and implications for public health

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Abstract

Urban environments imply a particular risk for food insecurity and poor nutrition, as the prevalence of overweight and obesity is more pronounced in such settings, particularly among the urban poor. Changes in the external food environment, which include food availability, prices, vendor and product properties, and marketing, are implicated as primary drivers of unhealthy food choices and dietary patterns in urban settings. Furthermore, it is estimated that most individuals living in extreme poverty (daily income under 1.25 US dollars) will live in urban areas by 2050 due to accelerated urbanisation. Projections by the Tanzania National Bureau of Statistics indicate that the urban population is expected to reach 45 million in 2030, making Tanzania the 6th fastest urbanizing country in the world.

The objective of this study was to spatially map food outlets in urban poor communities in Dar es Salaam City Council, Tanzania, and assess their healthiness. The city was purposefully selected due to the high concentration of urban poor communities. The external food environment was the focus of the research. Geographical Information System (GIS) integrated data location and attributes (density and typology) of food outlets to represent information spatially and allowed visualisation of the real situation through data and geographical organisation. In-store audits of food outlets collected data on the availability and types of foods available for sale. The GIS and in-store audit data were used to generate heat maps showing the typology and density of food outlets with healthy and unhealthy food options.

This research provides a comprehensive spatial profile of the food environment in selected urban poor communities by mapping food outlets, assessing their healthiness, and identifying spatial disparities. It further contributes to actionable insights for urban poor-specific interventions, including policy solutions and city planning, to ensure the availability of healthy foods. Finally, the research supports efforts in building sustainable food systems, thereby promoting healthier diets in urban poor communities.

Keywords: Food environment, food outlet, healthy food, spatial analysis, unhealthy food, urban poor

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