Urbanicity and Child Health in Africa: To what extent is living in urban areas associated with care seeking for fever in under-five children in Nigeria?

Bola Lukman Solanke
John Olugbenga Abe
Jude Osayawe Ewemade
Department of Demography and Social Statistics,
Obafemi Awolowo University, Ile-Ife, Nigeria

EXTENDED ABSTRACT

Description of Research Problem

Urbanicity refers to the impact of living in an urban area at a given time [1]. A number of studies have linked urbanicity to different aspects of health and social life [2-3]. The urban impact is thus well established in the literature. With the possible exclusion of poor and marginalized urban residents [4], urban impact in sub-Saharan Africa (sSA) is expected to improve the health and well-being of urban residents, particularly under-five children, who constitute a substantial proportion of the African population. Evidence in the literature suggests that the health of children living in rural and remote areas is worse off compared to their urban counterparts [5-7]. This may be a result of the availability of more health personnel and facilities, improved access to critical healthcare services, and improved governance and living conditions in urban areas. These features are believed to confer an 'urban advantage' on the health status of urban residents. Three international organizations recently provided further evidence of the 'urban advantage' by asserting that African urban areas are performing better than rural areas in many dimensions, such as income and consumption levels, less prevalence of underemployment, proportion of women in skilled occupations, education, lower fertility, and infrastructure provisions [8]. However, there is a paucity of evidence on how the 'urban advantage' has improved the health of urban children in different parts of sSA. Though existing studies have explored associations between living in urban areas and the different health challenges of under-five children [5, 7]. Nevertheless, evidence is not widely available on the extent to which living in urban areas is associated with care seeking for fever in under-five children. Fever in under-five children is a major symptom of malaria and other acute infections. It also signifies a key entry point into case management for malaria [9-10]. Malaria fevers require prompt and effective care seeking to prevent malaria morbidity and mortality, which remains a public health challenge in sSA [11]. Under-five children accounted for nearly 70% of total malaria deaths in the region [12]. Some of these deaths could be prevented with prompt treatment of the cases. But evidence in the literature suggests that less than half of under-five children with fever episodes received prompt treatment in most sSA countries [13-15]. The reasons accounting for the lack of prompt malaria treatment in urban settings of sSA need further investigation to strengthen existing interventions in urban areas of Africa. The objective of this study is to examine the extent to which living in urban areas is associated with care seeking for fever in under-five children in Nigeria. The country was selected for study because Nigeria has the highest burden of malaria in Africa [16]. Findings in the study will not only provide input for strengthening existing urban child health strategies; they will also confirm whether the urban child health advantage is diminishing, as noted in an existing study [17].

Theoretical Focus

The Andersen behavioral model of health service use underpins the study. The model as developed by Andersen asserts that three key factors influence healthcare use [18-19]. These are the predisposing factors (socio-demographic characteristics that may enhance or deter the likelihood of prompt care seeking), enabling factors (individual or household resources that enhance prompt care seeking), and need factors (conditions that reflect a potential need for care). Further development of the model partitioned influences on healthcare use into two categories, namely,

equitable access to care (the joint influence of predisposing and need factors on observed variations in the utilization of health services) and inequitable access to care (the joint influence of predisposing and enabling factors on observed variations in health service use). This model has been widely applied to analyze influences on the utilization of several healthcare services, including malaria [20-21].

Data and Research Methods

Data Source and Sample

The data analyzed in the study were extracted from the 2021 Nigeria Malaria Indicator Survey (NMIS) implemented by the National Malaria Elimination Programme (NMEP) of the Federal Ministry of Health, Nigeria, in conjunction with the National Population Commission (NPC). The data is nationally representative and collected based on a multi-staged sampling procedure. The analyzed weighted sample is 3,947 under-five children who had fever in the last two weeks preceding the survey. The data is available in the public domain and may be accessed via https://dhsprogram.com/data/.

Outcome Variable

The outcome variable in the study is care seeking for fever in under-five children. This was measured using four indicators, namely: (1) seeking advice or treatment within the same or next day after the fever started; (2) seeking advice or treatment either at a health facility or from a formal health provider; (3) having a diagnostic test performed or not; and (4) using a recommended first-line antimalarial drug. These measures were then used to generate a composite index of the outcome, categorized into 'prompt care seeking = 1' and 'non-prompt care seeking = 0'. This is consistent with the categorization adopted in an earlier study [22].

Explanatory Variables

The main explanatory variable is place of residence (urban or rural). Other explanatory variables were selected based on the Andersen model. These are six predisposing factors (children's age in months, number of under-five children in households, source of drinking water, type of sanitation facility, shared toilet facility, and sex of head of household), three enabling factors (maternal education, household wealth quintile, and exposure to malaria media messages), and two need factors (number of under-five children sleeping under mosquito bed nets and type of mosquito bed net).

Data Analysis

Respondents' and household characteristics were described using frequency distributions and percentages. The level of care sought was described using percentages. A cross-tabulation of care seeking and the explanatory variables was carried out to show variations in care seeking due to variations in the categories of each explanatory variable. A variance inflation factor (VIF) was performed to identify collinear variables before fitting two binary logistic regression models. Model 1 examined variables accounting for equitable care seeking for children with fever. Model 2 examined variables accounting for inequitable care seeking for children with fever.

Results

Results showed that 59.8% of children with fever received prompt care with a slight urban-rural disparity (61.9% vs. 59.2%). Among children who had fever, 32% received care the same or next day after the onset of fever; 29% took antimalarial drugs, out of which 76.3% received artemisinin-based combination treatments (ACTs) (the World Health Organization's recommended first line of action); and 24.3% took diagnostic tests. Though rural areas had lower odds of receiving prompt care, this was not statistically significant. The factors that significantly accounted for inequitable care seeking are sharing toilet facilities with lower odds in households where toilets were shared (OR = 0.71; 95% CI: 0.61-0.97); maternal education with higher odds among mothers with improved educational attainment; and the age of under-five children with higher odds at age 12-23 months (OR = 1.54; 95% CI: 1.05-2.27).

Discussion and Policy Implications

In agreement with findings in existing studies [5–7], the study found that rural under-five children were less likely to receive prompt care after the onset of fever. However, this was not backed in the study by statistical significance, indicating that the extent to which people living in urban areas are associated with prompt care seeking for fever is marginal. This implies that the "urban advantage' in child healthcare may be diminishing, in line with observations in some existing studies [4, 17]. The study's findings provided more support for the Andersen behavioral model. Two predisposing factors (sharing toilet facilities and the child's age) and one enabling factor (maternal education) accounted for inequitable care seeking in line with the assertion of the Andersen model [18–19]. These factors should be well targeted in urban child health strategies. It is important to note that toilet sharing is a key feature among poor and marginalized urban residents. This underscores the need for more social and economic policies to devise more workable means of eradicating urban poverty. Existing policies should strengthen the provision of improved education for women in urban areas to further improve public health education about malaria and the associated consequences among under-five children. Urban child health policies should include strategies to improve care for all under-five children, with special attention to promoting care for children aged 0–11 months, which is the age group where morbidity and mortality are dominant among children. Without concerted efforts to improve child health across sSA, the expected benefits of urbanization may continue to exclude the region

Conclusion

Living in an urban area in any part of sSA should enhance the health and general well-being of urban residents for the 'urban advantage' to truly manifest. With the rise in the level of urban poverty and marginalized urban residents, the 'urban advantage' is fast declining in many areas of life, including child health. With the highest burden of malaria in Africa, child health in Nigeria may continue to dwindle due to ravaging malaria infections. Massive public health education is needed in all urban areas of the country to promote prompt care seeking for malaria in under-five children.

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