

Patterns of healthcare utilisation and barriers affecting access to child healthcare services in low-income urban South African settings

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Background. Improving access to quality healthcare can contribute to reducing childhood mortality. Therefore, understanding the patterns of healthcare utilisation for common childhood conditions as well as barriers to healthcare use is important in planning appropriate public health programmes and interventions.

Objective. The objective of the present study was to examine patterns of child healthcare uptake and barriers that affect access to healthcare in two South African (SA) low-income urban settings.

Methods. A healthcare utilisation survey was conducted between April and September 2015, using a cross-sectional study design. Data were analysed using descriptive and inferential statistics. Information was collected on 531 children and their caregivers from 503 randomly selected households.

Results. Our findings revealed that 81.9% of respondents preferred clinics as their first choice, and 84.2% preferred hospitals as their second point of call. About 5% of caregivers preferred faith-based/traditional healers as their second point of call. Barriers to accessing healthcare were reported for more than half of the sampled children (52.0%), such as long queues at the health facility (HF), poor attitudes of healthcare workers, lack of medicine and the distance to the HF, which constitute major barriers. These findings were echoed in multivariable analysis. For instance, distance to the HF (odds ratio (OR) 2.01; confidence interval (CI) 1.04 - 3.89, $p < 0.05$) was a strong predictor for barriers to accessing child healthcare services.

Conclusion. Considering the benefits of unrestricted access to quality care for positive child health outcomes, the present study underscores the need for improved access to adequate healthcare in the selected locations in SA.

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Access to quality healthcare holds great potential for the survival of under-5 children and their mothers;^[1-4] nevertheless, healthcare access remains limited in sub-Saharan Africa (SSA),^[5,6] thus contributing more than half of the global figure of 5.9 million deaths of under-5 children.^[7] Two-thirds of these deaths could be prevented by adequate access to proven healthcare interventions.^[8]

Although the South African (SA) under-5 mortality rate (42 per 1 000 live births) is much lower than SSA's average (78 per 1 000 live births),^[9,10] the national estimate possibly masks sub-national variations. Provincial estimates indicate variations in under-5 mortality rates (per 1 000 live births) from 43 in Gauteng to 78 in Eastern Cape provinces,^[11] which could be due to variable access to healthcare. Eighty percent of SA's population depends on the public health sector, and only 16% have private medical insurance,^[12] which places huge strain on public health facilities; the number of patients per clinic is currently estimated at 13 718, which exceeds the World Health Organization (WHO)'s recommendation of 10 000 per clinic.^[12] Moreover, there is a shortage of medical doctors, with the ratio of physicians per 1 000 population unchanged between 2004 (0.77) and 2011 (0.76).^[13]

One of the targets of the Sustainable Development Goals (SDGs) is to provide affordable and quality universal healthcare coverage.^[14] Although SA's national health policy aligns with the SDG targets and emphasises provision of healthcare for all, wide sub-national

variations exist. Ninety-six percent of live births in the 5 years preceding the 2016 South Africa Demographic and Health Survey (2016 SADHS) were assisted by a skilled provider; nevertheless, ~40% of under-5 mortality in SA still occurs during the first month of life,^[9] which suggests possible systemic barriers to adequate uptake of healthcare services during the antenatal, delivery and postnatal periods. While evidence on healthcare use is available at national and provincial levels through routine specialised surveys such as the General Household Surveys (GHS) and Demographic and Health Surveys (DHS), there is a paucity of data on patterns of healthcare utilisation (HCU) at district or sub-district levels, including in low-income urban settings such as Soweto and Orange Farm (townships in south-west Johannesburg). The present study examined patterns of child healthcare uptake and barriers affecting access to healthcare utilisation in 2 SA low-income urban settings.

Public healthcare in Soweto and Orange Farm

Soweto has a substantial number of healthcare facilities at the primary and secondary/tertiary levels. These include 23 primary healthcare (PHC) clinics and 2 public hospitals – Chris Hani Baragwanath Academic Hospital (CHBAH) and Jabulani Hospital. While PHCs offer services during the day only, the 2 hospitals offer 24-hour services. The PHCs are well sited across Soweto to ensure

reasonable proximity of 2 km or less to most households within the community. CHBAH is a 2 850-bed hospital, and is the third-largest in the world.^[15] It includes 250 general paediatric beds and 200 neonatal beds. Jabulani Hospital was opened in June 2014 and has 60 paediatric beds. Although Orange Farm has more than 10 PHCs, CHBAH remains an important source of care and referral for most residents in this community. Private healthcare is generally expensive in SA, and less than 10% of Soweto and Orange Farm residents have private medical insurance.^[12] It is estimated that more than 90% of all hospitalisations of residents of these communities take place at CHBAH. All healthcare for pregnant women and children <6 years old, including diagnostic tests and treatments at the hospital and PHCs, are free. Although there is a wide network of private general practitioners (GPs) and traditional healers in Soweto and Orange Farm, CHBAH remains the primary source of care as well as referral for serious illnesses from these GPs.

Study design and participants

The present paper used data collected for a larger study on HCU among under-5 children in Soweto and Orange Farm. The study undertook a community-based cross-sectional survey with the aim of assessing patterns of healthcare-seeking behaviour among primary caregivers of under-5 children, including the level of hospitalisation among the children. The HCU survey assessed the factors influencing non-utilisation of healthcare facilities for children in the study settings. A cross-sectional survey was conducted among a representative sample of 503 randomly selected households in Soweto and Orange Farm. Soweto is a low-income, urban black community of about 1.3 m people, including 125 000 children under 5 years old. Orange Farm township was established in 1988 to accommodate the ever-increasing population of the Johannesburg Metropolis. Orange Farm has a total of 8 sub-places and a population of 76 767.^[12]

Potential participants were selected through a two-stage sampling selection process. In the first stage, selected communities were stratified according to neighbourhoods with homogenous dwelling units (DUs). Each neighbourhood was further sub-divided into clusters, and clusters were randomly selected in the sampled neighbourhoods, with the number of selected clusters proportional to the size of each neighbourhood. In the second stage, the boundaries of each residential neighbourhood were delineated on aerial maps available from Google Earth. Geographic co-ordinates were randomly selected within each neighbourhood, where the number of co-ordinates selected was proportional to the population size of that neighbourhood. The DUs closest to the randomly selected geographic co-ordinates were selected. Thereafter, a representative sample of 503 households was chosen from the selected DUs. Eligible respondents, i.e. mothers or primary caregivers (who gave consent to participate in the survey) with at least 1 child aged 0 - 59 months in the sampled households, were interviewed, using a semi-structured questionnaire preloaded into digital devices using open data kits (ODKs). The questionnaires were designed to collect information on household demographic and socioeconomic characteristics and child healthcare utilisation over the previous 12 months. Most of the questions were close-ended with pre-coded responses from which study participants could choose and, in most cases, there was the option of 'Other, specify', if the respondent's answer was different from all the pre-coded answers provided in the questionnaire. Further, questions that required numerical responses were structured in the questionnaire in a way that allowed respondents to freely provide numerical answers. For instance, respondents were allowed to freely report the estimated distance to the nearest health facility in kms.

Variables measurement

The outcome variable analysed in this study is 'barriers to healthcare use', defined as having any form of barrier affecting access to utilisation of modern medical services for children aged 0 - 59 months; and coded as '1' if any barrier was reported, or '0' if no barrier was reported.

The selected explanatory variables for the study included the demographic and socio-economic variables. The operational definitions for these selected characteristics are presented in Table 1.

Statistical analysis

Analysis included descriptive and inferential statistics, using univariate, bivariate and multivariable analytical approaches. The univariate analysis was conducted to describe the data with the use of frequencies and percentages. Bivariate analysis was done to explore statistically significant relationship between the outcome variable and each of the explanatory variables, using the Pearson χ^2 test. The multivariable analysis simultaneously examined the relationship between the outcome variable and all the explanatory variables. We employed binary logistic regression in the multivariable analysis, given the dichotomous nature of the outcome measure. We fitted two models to identify the predictors of child healthcare utilisation in the study locations. Model 1 presents findings from statistical analysis which examined the relationship between HCU and each

Table 1. Explanatory variables for modelling healthcare utilisation for under-5 children in Soweto and Orange Farm townships in South Africa

Variables	Operational definition
Child's age, months	Self-reported age of child at time of survey: categorised as 0 - 11, 12 - 23, 24 - 35, >35
Child's sex	(1) male, (2) female
Caregiver's religion	Christian, African tradition/other
Caregiver's education	Highest level of education attained: none, primary, secondary, post-secondary
Caregiver's ethnic affiliation	Zulu, Xhosa, Sotho, Tswana, Venda, Pedi, other
Type of housing unit	Type of dwelling occupied by household members: brick, metal sheet/other
Access to drinkable water	Main source of drinkable water for household members: indoor access, outdoor access
Access to toilet facility	Main toilet facility for use by household members: indoor access, outdoor access
Variables on access to healthcare	
Place of delivery	Health facility where child was delivered
First call for child healthcare if ill	First health facility where care is sought when child is ill: Clinic, hospital, faith/traditional healers
Second call for child healthcare if ill	Second health facility where care is sought when child is ill: Clinic, hospital, faith/traditional healers
Reasons for choice of facility	Main reason for choice of facility for child care: proximity, no payment required, other reason
Type of barrier to healthcare	Problem that constitutes barrier to healthcare: long queues in facility, no medicines in facility, poor attitude of health workers
Distance to facility	Self-reported distance to health facility in kilometres, and categorised as: <2 km, 2 - 3 km, 4 - 5 km, and >5 km

of the selected explanatory variables. Model 2 is the full model which simultaneously examined association between HCU and all the selected explanatory variables. The unit of analysis was children <5 years old. We present results in the form of odds ratios (ORs) and 95% confidence intervals (CIs). All analysis was done using STATA (StataCorp., USA) version 13.0.

Ethical consideration

The study was approved by the Health Research Ethics Committee of the University of the Witwatersrand, Johannesburg, SA (ref. no. 170216).

Results

Descriptive statistics

Household demographic information is reported in Table 2. Of the 531 children, both genders were of equal numbers, most were age 36 - 59 months, and further age-group stratification is detailed in Table 2. Regarding maternal/caregivers' characteristics, a majority had secondary education. Most respondents were of the Christian faith and of Zulu ethnic origin. Houses were generally made of brick and access to drinkable water and a toilet were mostly indoors.

Table 2. Percentage distribution of child and primary caregiver's characteristics

Characteristics	n (%)
Child's sex	
Male	261 (49.2)
Female	270 (50.8)
Child's age, months	
0 - 11	111 (21.2)
12 - 23	143 (26.3)
24 - 35	116 (22.2)
36 - 59	153 (29.3)
Caregiver's level of education	
None	70 (34.5)
Primary school	35 (17.2)
Secondary school	88 (43.54)
Post-secondary school	10 (4.9)
Religion	
Christian	435 (81.9)
African traditional/other	96 (18.1)
Ethnicity	
Zulu	204 (38.4)
Sotho	99 (18.6)
Venda	84 (15.8)
Xhosa	24 (4.5)
Tswana	24 (4.5)
Pedi	24 (4.5)
Other	72 (13.6)
Type of housing	
Brick	435 (81.9)
Metal sheet/other	96 (18.1)
Access to drinkable water	
Indoor	351 (66.1)
Outdoor	180 (33.9)
Access to toilet facility	
Indoor	303 (57.1)
Outdoor latrine	228 (42.9)

Patterns of healthcare utilisation and barriers affecting access to child healthcare

The results in Table 3 indicate that CHBAH was reported as place of delivery for almost half of the sampled children. Also, caregivers were asked about their first and second choices of health facility if their children became ill. An overwhelming majority reported a clinic as their first choice while 84.2% indicated hospital as their second point of call. About 5% of caregivers preferred faith-based or traditional healers as their second point of call. The results in Table 3 confirm proximity to health facility as an important factor in the choice of health facility for child healthcare, as about 90% of respondents indicated proximity to health facility as the reason for their choice of facility for child healthcare.

Findings on barriers to child healthcare showed that slightly more than half of the sampled respondents reported barriers to child healthcare services. When barriers to child healthcare were disaggregated by problem/type of barrier, the results indicated health system barriers such as long queues at health facilities as the main problem constituting a barrier to child healthcare utilisation in the study areas. Other health system barriers included poor attitudes of healthcare workers and lack of medicines in the health facility. Distance to health facility was also reported as a problem by about 60% of caregivers.

Results from bivariate analysis

Table 4 presents results from bivariate analysis which examined the relationship between barriers to child healthcare and selected characteristics. The results of cross-tabulations indicated a

Table 3. Percentage distribution of selected variables on access to child healthcare services

Variables	n (%)
Place of child delivery	
Chris Hani Baragwanath Academic Hospital	259 (48.4)
Other	272 (51.2)
First facility for child healthcare if ill	
Primary healthcare clinic	435 (81.9)
Hospital	84 (15.8)
Faith/traditional healer	12 (2.3)
Second facility for child healthcare if ill	
Clinic	60 (11.3)
Hospital	447 (84.2)
Faith/traditional healer	24 (4.6)
Reasons for choice of facility for child care	
Proximity	411 (88.7)
No payment required	96 (18.1)
Other	24 (4.5)
Experienced barriers to healthcare	276 (52.0)
Caregivers' experiences that constitute barriers to child healthcare	
Long queues in facility	120 (43.5)
No medicine in facility	36 (13.0)
Poor attitude of health workers	96 (34.8)
Other	24 (8.7)
Distance to facility, km	
<2	303 (57.0)
2 - 3	192 (36.2)
4 - 5	24 (4.5)
>5	12 (2.3)

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significant relationship between religion, ethnicity, type of housing material, distance to health facility and access to child healthcare services ($p < 0.05$).

The analysis indicates that barriers to healthcare uptake were reported for almost half of all children. Barriers to child healthcare services were mostly reported for children < 1 year old compared with those ≥ 1 year old. Educated caregivers were less likely to report barriers to child healthcare. Type of housing material was used as a proxy variable for household socioeconomic status, with the assumption that the

very poor are likely to live in shacks and dwellings made of metal sheets. Results indicate that higher numbers of mothers/caregivers living in shacks experienced barriers to child healthcare services than those living in brick dwellings. Distance to health facility was reported as a significant factor affecting access to child healthcare ($p < 0.001$). The association of barriers to child healthcare with other characteristics is set out in Table 4.

Results from multivariable analysis

Table 5 presents the results from binary logistic regression analysis which examined

the relationship between barriers to child healthcare services and selected variables. Results in Model 1 indicate a significant association between access to child healthcare and some characteristics, including religion, ethnicity, type of housing material and distance to health facility. For instance, respondents whose religion was African traditional had twice the probability of reporting barriers to child healthcare than their Christian counterparts (OR 2.05, 95% CI 1.30 - 3.23; $p < 0.05$). Results in Model 1 also indicate a significant association between residence in shacks and barriers to child healthcare (OR 4.13, 95% CI 2.51 - 6.81; $p < 0.001$). Distance to health facility was significantly associated with barriers to child healthcare services.

Results from Model 2 (Table 5) indicate lower odds of reporting barriers to healthcare for children aged 12 - 23 months than those < 1 year old (OR 0.40, 95% CI 0.16 - 0.99; $p < 0.05$). Ethnicity remained significantly associated with access to child healthcare ($p < 0.001$). The association of barriers to child healthcare with the proxy variable for socioeconomic status, and distance to health facilities, was echoed in Model 2. For instance, respondents living in shacks (OR 6.74, 95% CI 2.48 - 18.29; $p < 0.001$) and those residents more than 2 km from the nearest health facility (OR 2.01, 95% CI 1.04 - 3.89; $p < 0.05$) had significantly higher odds of reporting barriers to child healthcare services.

Discussion

This study was a sub-national analysis of patterns of healthcare utilisation and barriers to accessing child healthcare services. Growing inequalities exist in access to quality and affordable healthcare services in many SSA countries,^[2,16] including SA. Given that adequate access to healthcare holds great potential for good child health outcomes,^[1,2] understanding the barriers affecting access to child healthcare, particularly from caregivers' perspectives, is important when designing appropriate public health programmes.

Our findings indicate that although the sampled children in the selected locations were delivered in ~60 different hospitals/clinics, almost half of these children were delivered in CHBAH alone. The literature suggests that women prefer giving birth at health facilities, and particularly in hospitals, because there are enough resources and trained health practitioners.^[17] Our findings also established that long queues and poor attitudes of healthcare workers were major health system barriers

Table 4. Bivariate relationship between child healthcare utilisation and selected characteristics

Characteristics	Access to child healthcare		χ^2
	Experienced barriers (%)	Experienced no barriers (%)	
Child's sex			0.004
Male	47.9	52.1	
Female	48.2	51.9	
Child's age, months			2.38
0 - 11	54.1	46.0	
12 - 23	47.6	52.5	
24 - 35	44.0	56.0	
>35	48.4	51.6	
Caregiver's level of education			2.13
None	42.9	57.1	
Primary	57.1	42.9	
Secondary	47.7	52.3	
Post-secondary	40.0	60.0	
Religion			9.84*
Christian	44.8	55.2	
African tradition/other	62.5	37.5	
Ethnicity			48.6†
Zulu	58.8	41.2	
Xhosa	50.0	50.0	
Sotho	51.5	48.5	
Tswana	50.0	50.0	
Venda	14.3	85.7	
Others	50.0	50.0	
Type of housing material			34.2†
Brick	42.1	57.9	
Metal sheet/others	75.0	25.0	
Access to drinkable water			0.2
Indoor	48.7	51.3	
Outdoor	46.7	53.3	
Access to toilet facility			3.4
Indoor	44.6	55.4	
Outdoor	52.6	47.4	
Distance to facility, km			15.6†
<2	40.6	59.4	
≥ 2	57.9	42.1	

* $p < 0.01$

† $p < 0.001$.

Table 5. Odds ratio (OR) and 95% confidence interval (CI) from binary logistic regression analysis examining relationship between barriers to healthcare utilisation and selected characteristics

Characteristics	OR (95% CI) Model 1	OR (95% CI) Model 2
Child's sex		
Male	1	1
Female	1.01 (0.72 - 1.42)	0.96 (0.50 - 1.83)
Child's age in months		
0 - 11	1	1
12 - 23	0.77 (0.47 - 1.27)	0.40 (0.16 - 0.99)*
24 - 35	0.67 (0.40 - 1.13)	0.50 (0.19 - 1.35)
>35	0.80 (0.49 - 1.30)	0.84 (0.32 - 2.18)
Caregiver's level of education		
None	1	1
Primary	1.78 (0.78 - 4.04)	1.41 (0.54 - 3.66)
Secondary	1.22 (0.65 - 2.29)	1.29 (0.62 - 2.69)
Post-secondary	0.89 (0.23 - 3.43)	0.91 (0.19 - 4.21)
Religion		
Christian	1	1
African tradition/other	2.05 (1.30 - 3.23)*	0.79 (0.33 - 1.89)
Ethnicity		
Zulu	1	1
Xhosa	0.71 (0.30 - 1.63)	0.57 (0.14 - 2.42)
Sotho	0.74 (0.46 - 1.21)	1.26 (0.53 - 2.98)
Tswana	0.70 (0.30 - 1.63)	0.88 (0.18 - 4.29)
Venda	0.12 (0.06 - 0.22)‡	0.10 (0.03 - 0.38)†
Other	0.72 (0.43 - 1.13)	0.45 (0.17 - 1.14)
Type of housing material		
Brick	1	1
Metal sheet/other	4.13 (2.51 - 6.81)‡	6.74 (2.48 - 18.29)‡
Distance to facility, km		
<2	1	1
≥2	2.01 (1.42 - 2.86)‡	2.01 (1.04 - 3.89)*

*p<0.05.
†p<0.01.
‡p<0.001.

affecting access to child healthcare services in the study settings. It is well established that overstretching of healthcare resources is a major barrier to the delivery of safe and high-quality healthcare.^[18-20] This issue therefore requires attention, particularly in the public health sectors.

Although our data showed that most respondents were resident within 2 km of the nearest hospital or clinic, it is unclear why most people would prefer to travel long distances to seek child healthcare. As previously established, plausible reasons for seeking care in distant locations, instead of near-by facilities, may include concerns about poor quality of care, lack of commitment of health workers to the needs of children and caregivers, quackery and problems about availability and affordability of satisfactory healthcare services.^[16,21,22]

Most caregivers in the selected study locations preferred clinics as their first choice, with hospitals mainly the second point of call for child care. This finding is consistent with evidence from the nationally representative study (2017 General Household Survey (GHS)) which found that more than 70% of households made use of clinics, hospital or other public facilities as the first point of access if any household member needed medical attention.^[23] Hospitals were perhaps the second choice because they offer 24-hour services and are better equipped to attend to emergencies and referrals. The present study also found that some caregivers consulted faith-based and traditional healers for child healthcare. This establishes a healthcare context of medical pluralism in SA, showing that alternative healthcare providers such as

traditional birth attendants, traditional/faith healers, and patent medicine sellers have the patronage of women and other caregivers, as in other SSA countries.^[21] Prior studies suggest that caregivers tend to patronise alternative healing practitioners when they observe that biomedicine and orthodox medical practices have failed to improve their children's health.^[24-27]

Moreover, the present analysis established that more than half of respondents reported barriers to child healthcare in the selected locations. The reasons adduced included long queues at the facilities, poor attitudes of healthcare personnel and lack of medicine in the facilities. Results from our multivariable analysis established poverty and distance to health facility as significant predictors of barriers to child healthcare. Therefore the need to eliminate both demand- and supply-side barriers affecting access to quality and affordable healthcare services is particularly urgent in the selected locations in SA. Considering that a right to health is a constitutional provision in the country, addressing the identified barriers affecting access to child healthcare is an important public health investment and priority. Although evidence shows there are many ongoing activities within the public healthcare system in SA that aim to improve access to affordable care,^[16,22,28] much still needs to be done to ensure universal healthcare coverage, particularly for children.

Study limitations

The study has some limitations. Firstly, it was a small-scale study and its findings may not be generalisable or representative of SA. Secondly, a number of relevant variables such as socioeconomic and poverty status that could influence access to healthcare, are not available in the datasets, and hence proxy variables were used to measure poverty status. Also, being a cross-sectional survey, a cause-effect relationship could not be established. Notwithstanding these limitations, the study has filled an important gap in the public health literature, particularly as regards evidence on access to child healthcare at the sub-district level and in low-income urban settings in SA.

Conclusion

Despite the fact that primary healthcare is free for children and pregnant women in SA, a significant proportion of caregivers face enormous barriers to quality child healthcare in the selected study locations. Considering the benefits of unrestricted

access to adequate care for positive child health outcomes, this study suggests the need to address various barriers affecting access to quality healthcare in the selected locations and other similar settings in SA; this would serve as a part of important strategies to firmly place the country on the path towards the attainment of SDG targets on child health and survival.

Declaration. None.

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Author contributions. SAM conceptualised the research idea and reviewed the paper for critical inputs. SAA reviewed the literature, analysed the data and drafted the manuscript. MS and DT were involved in the study design, data collection, review of literature, and data analysis. All authors reviewed and approved the final version of the paper.

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