A Multilevel Modelling of Barriers to Healthcare Access and Healthcare Seeking for Childhood Illnesses Among Childbearing Women in Burundi

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Abstract

Background

Poor health seeking behaviour continue to be major challenge in accessing healthcare in sub-Saharan Africa despite the availability of effective treatment for most childhood illnesses. The current study investigated the barriers to healthcare access and health seeking for childhood illnesses in Burundi.

Methods

The study utilized data from the 2016-17 Burundi Demographic and Health Survey (BDHS). A total of 11,828 childbearing women who had complete information on all the variables of interest were included in our study. The outcome variable for the study was healthcare seeking for childhood illnesses. The data were analyzed using STATA version 14.2 for windows. Chi-square test of independence and a multilevel modelling were carried out to generate the results. Statistical significance was pegged at 95% confidence intervals (CIs).

Results

Overall, 80.55% of women in Burundi sought care for their children's illness. We found that women who perceived getting money for medical care for self as a big problem [AOR=0.82; CI=0.73-0.91] and considered going for medical care alone as a big problem [AOR=0.84; CI=0.73-0.96], had lower odds of seeking healthcare for their children, compared to those who considered these indicators as not a big problem. The results also showed that cohabiting mothers [AOR=0.86; CI=0.76-0.96], those taking healthcare decisions alone [AOR=0.83; CI=0.71-0.97], women in female headed households [AOR=0.85; CI=0.74-0.98], women with children larger [AOR=0.86; CI=0.77-0.96] and smaller than average [AOR=0.76; CI=0.67-0.87], single birth children [AOR=0.65; 0.47-0.89], and women in rural areas [AOR=0.79; CI=0.63-0.99] had lower odds of seeking care for their children's illness.

Conclusion

Findings suggest that Burundi should strengthen maternal health care regarding women's healthcare accessibility and health seeking behaviours, especially with residential consideration and among women from the poorest wealth quintile, those cohabiting and those with lower parity. The Burundian government through multi-sectoral partnership should strengthen health systems (e.g. pay-for-performance [P4P]) for maternal health and address structural determinants of women's health by creating favourable conditions to improve the status of women and foster their overall socioeconomic well-being.

Introduction

Despite the tremendous progress made in reducing childhood morbidity and mortality globally, the situation in sub-Saharan Africa (SSA) still remains a major public health concern. For instance, in 2018, the UN Inter-agency Group for Child Mortality Estimation (UN IGME) estimated that 3.3 million children

under age 15 died in SSA, representing 53% of childhood deaths globally (6.2 million) in the world [1]. Averagely, 1 in 13 children die in SSA compared to 1 in 199 in high income countries, with most of these childhood deaths (85%) occurring in the first years of life [1,2]. Thus, under-five morbidity and mortality continue to be a major challenge in SSA. Although under-five mortality rates in Burundi have declined significantly from 174 deaths per 1,000 live births in 1990 to 58 deaths per 1,000 live births in 2018 [1], the rate still remains high.

Childhood deaths are often caused by treatable or preventable diseases such as diarrhoea, malaria, pneumonia, and preterm birth complications [1,2]. In 2010, approximately 93% of all hospitalisation of children between 1 to 59 months in Burundi were due to malaria, respiratory tract infections, and acute diarrhoea [3]. Meanwhile, available evidence suggests that inadequate access to healthcare services [4,5] and inappropriate health seeking behaviour [6] significantly account for most childhood illnesses and resultant deaths in SSA. According to UN IGME [1], about 50% of under-five mortality could be prevented by having timely access to quality healthcare. Access to healthcare continue to be a major challenge in Burundi as the country ranked 186 out of 195 countries assessed for healthcare access and quality in 2016 [4].

Accessing healthcare for childhood illnesses is not only determined by distance to healthcare facilities and cost of obtaining healthcare services [8,5], but also the health seeking behaviours of parents/guardians, most notably the mother [9,10]. Akinyemi et al. [11] suggested that poor health seeking behaviour continues to be a major challenge in accessing healthcare in SSA despite the availability of effective treatment for most childhood illnesses. Studies have shown that the decision to seek healthcare for a sick child in SSA is largely determined by the child's age [12,13,14], mother's educational level and marital status [8], mother's age [15], family size, previous experience of similar illness, history of under-five mortality [13], mother's knowledge level on danger signs of childhood illnesses such as fever [12], family income [10,16], geographic location or distance [12,8], and ethnicity [17,9]. For example, perceived non-seriousness of child's illness delayed or prevented mothers from seeking healthcare services for their children in Ethiopia [18]. Also, parents/guardians in Kenya, who lived more than a kilometre from a health facility, were less likely to seek care for their sick children [8].

Considering the importance of timely access to healthcare and appropriate health seeking behaviour in reducing the severity of childhood illnesses and associated deaths, it is important to investigate the specific barriers to healthcare access and health seeking behaviour in order to develop specific strategies that could address them. Therefore, this current study investigated the barriers to healthcare access and health seeking behaviour for childhood illnesses in Burundi to make recommendations that could potentially address these barriers and improve childhood morbidity and mortality in the country.

Materials And Methods

The study utilized data from the 2016-17 Burundi Demographic and Health Survey (DHS). Specifically, data from the birth recode file was used. The DHS is a nationally representative survey that is conducted

in over 85 low-and middle-income countries globally. The survey focuses on essential maternal and child health markers including “health seeking behaviour”, “contraceptive use”, “skilled birth attendance”, “immunization among under-fives” and “intimate partner violence” [19]. The survey employs a two-stage stratified sampling technique, which makes the data nationally representative. The study by Aliaga and Ruilin [20] provides details of the sampling process. The surveys employ a two-stage stratified sampling technique which makes the survey data nationally representative [20]. Specifically, the initial stage had to do with the generation of a sampling frame which contained a catalogue of enumeration areas (EAs) that covered the given country. The EAs are mostly generated based on the most recent national census data in the country. Each EA is subsequently segmented into standard size segments of about 100–500 households per segment. Thereafter, a sample of predetermined segments was selected randomly with probability proportional to the EA’s. The next stage–second stage also involved the systematic selection of households from a list of previously enumerated households in each selected EA. This stage then involved the conduction of in-person interviews in selected households with the various target populations: women (15–49) and men (15–64). The number of selected households per EA ranged from 30 to 40 households/women per rural cluster and from 20 to 25 households/women per urban cluster. A total of 11,828 women who had complete information on all the variables of interest were included in our study.

Definition of variables

Outcome variable

The outcome variable for the study was health seeking behaviour for childhood illnesses. It was derived as a composite variable from two questions, “Did [NAME] receive treatment for diarrhea?”, and “Did [NAME] receive treatment from fever/cough?” The responses were “Yes” and “No”. For the purpose of this study, “No” and “Yes” were coded 0 and 1 respectively.

Independent variables

The study looked at problems in accessing health care as the independent variable. This variable was generated by asking women if they had serious problems in accessing health care for themselves when they are sick and the type of problem. The problems were difficulty with distance to the facility, difficulty in getting money for treatment, difficulty with getting permission to visit health facility, and difficulty in not wanting to go for medical help alone. These variables were recorded as “Big problem” and “Not big problem”. For the purpose of this study, “Big problem” and “Not big problem” were coded 0 and 1.

Control variables

Sixteen control variables were considered in the study. These variables are community literacy level, community socio-economic status, age, marital status, health care decision making capacity, employment, religion, place of residence, parity, exposure to mass media (radio, television and newspaper), sex of head of household, size of child at birth, birth order, twin status, and sex of child. The

variables were not determined a priori; instead, based on parsimony, theoretical relevance and practical significance with health seeking behaviour for childhood illnesses [12,21,22,23]. Marriage was recoded into “never married (0)”, “married (1)”, “cohabiting (2)”, “widowed (3)”, and “divorced (4)”. We recoded parity (birth order) as “one birth (1)”, “two births (2)”, “three births (3)”, and “four or more births (4)”. We recoded religion as “Christianity (1)”, “Islam (2)”, “Traditionalist (3)”, and “no religion (4)”. We recoded size of child at birth as “larger than average”, “average”, and “smaller than average”. And we recoded twin status as “single birth” and “multiple birth”.

Statistical Analysis

The data was analysed with STATA version 14.2. The analyses were done in three steps. The first step was the computation of the prevalence of women’s health seeking behaviour for childhood illnesses in Burundi (see Figure 1). The second step was a bivariate analysis that calculated the prevalence and proportions of health seeking behaviour for childhood illnesses across the independent variables with their significance levels (see Table 1). Statistical significance was considered at a p-value less than 0.05. Variables that showed statistical significance in the bivariate analysis were further analyzed using multivariate hierarchical logistic regression. Before conducting the multivariate hierarchical logistic regression analysis, a multi-collinearity test was carried out among all the statistically significant variables to determine if there was evidence of multicollinearity between them. Using the variance inflation factor (VIF), the Multicollinearity test showed that there was no evidence of collinearity among the explanatory variables (Mean VIF=1.20, Max VIF=1.53, Minimum=1.03).

The multivariate hierarchical logistic regression analysis was carried out in three stages. At the initial stage, the key independent variables, maternal and child level variables that showed statistical significance with women’s health seeking behaviour for childhood illness at the bivariate analysis were entered in the first model to assess their association with women’s health seeking behaviour for childhood illness (see Model I). In the second stage, the community level variables that were significant at the bivariate analysis were added to the first model to assess their association with the individual level distal socioeconomic determinants variables and women’s health seeking behaviour for childhood illness (see Model II). For the third stage, all the variables were added to the full model (III). A sample weight (v005/1,000,000) to correct for over and under sampling was applied and the SVY command to account for the complex survey design and generalizability of the findings was also used. In this study, we relied on the Strengthening the Reporting of Observational Studies in Epidemiology’ (STROBE) statement in writing the manuscript [24].

Ethical approval

Ethical clearance was obtained from the Ethics Committee of ORC Macro Inc. as well as Ethics Boards of partner organisations of the various countries such as the Ministries of Health. The DHS follows the standards for ensuring the protection of respondents’ privacy. Inner City Fund (ICF) International ensured that the survey complies with the U.S. Department of Health and Human Services regulations for the respect of human subjects. This study employed a secondary analysis of data and therefore no further

approval was required because the entire data is available in the public domain. Further information about the DHS data usage and ethical standards are available at <http://goo.gl/ny8T6X>.

Results

Prevalence of healthcare seeking for childhood illnesses in Burundi

Figure 1 displays results from the study on the prevalence of healthcare seeking for childhood illnesses in Burundi. Approximately, 80.55% of women in Burundi seek care for their children illness.

Health seeking behavior for childhood illness across independent variables

Table 1 shows the distribution of barriers to healthcare, individual, and community factors, and healthcare seeking for childhood illnesses among childbearing women in Burundi. Results show that 5.5% of the childbearing women indicated that they did not have a big problem getting permission to seek medical care, 63.4% indicated that they face a big problem getting money to seek care, while 33.3% and 16.4% also indicated that distance and not wanting to go to a health facility alone were their biggest problems respectively. Majority of the women were in rural areas (91.5%), 28.5% were aged 25-29, 74.5% were married, and 89.6% indicated that they do not take healthcare decisions alone. About 49.1% of the children were of average size at birth, 48.6% of the women had parity 2-4, 97.1% of them were single births, and 50.6% were males. The study also showed that 27.9% of the mothers were aged 25-29, 52% had four or more births, 74.6% were working, and 61.1% were Christians. Regarding exposure to mass media, 23.1% were exposed to mass media. The chi-square analysis showed that, getting money for medical care, distance to facility for medical care, wanting to go for medical care alone, community literacy level, community socio-economic status, residence, marital status, health care decision making capacity, religion, sex of household head, size of child at birth, and twin status had statistically significant association with healthcare seeking for childhood illnesses at $p < 0.05$.

Table 1: Health seeking behavior for childhood illness across independent variables

Variable	Weighted N	Weighted %	Health seeking behavior	χ^2 (p-value)
Getting permission for medical care for self				3.8 (0.050)
Big problem	652	5.5	77.6	
Not a big problem	11176	94.5	80.7	
Getting money for medical care for self				35.6 (<0.001)
Big problem	7494	63.4	79.2	
Not a big problem	4334	36.6	82.9	
Distance to facility for medical care for self				19.3 (<0.001)
Big problem	3943	33.3	79.0	
Not a big problem	7885	66.7	81.3	
Wanting to go for medical care alone				31.6 (<0.001)
Big problem	1940	16.4	76.2	
Not a big problem	9888	83.6	81.4	
Age				3.1 (0.796)
15-19	141	1.2	79.3	
20-24	2030	17.2	80.0	
25-29	3340	28.2	80.2	
30-34	2986	25.3	81.0	
35-39	2038	17.2	81.1	
40-44	1011	8.5	81.4	
45-49	282	2.4	78.2	
Marital status				12.4 (<0.001)
Married	8813	74.5	81.4	
Cohabiting	3015	25.5	78.1	
Health care decision making capacity				12.4 (<0.001)
Alone	1232	10.4	75.7	

Not alone	10596	89.6	81.1
Parity			3.0 (0.386)
One birth	1013	8.6	78.4
Two births	2144	18.1	80.3
Three births	2185	18.5	81.1
Four or more births	6486	54.8	80.8
Employment status			2.4 (0.122)
Not working	730	6.2	82.7
Working	11098	93.8	80.4
Religion			14.6 (0.001)
Christianity	11211	94.8	80.6
Islam	334	2.8	85.2
No religion	283	2.4	74.1
Exposure to mass media			0.01 (0.922)
No	9092	76.9	80.6
Yes	2736	23.1	80.3
Sex of household head			5.5 (0.019)
Male	10258	86.7	80.9
Female	1570	13.3	78.1
Size of child at birth			22.3 (<0.001)
Larger than average	4140	35.0	79.3
Average	5806	49.1	82.6
Smaller than average	1882	15.9	77.0
Birth order			5.6 (0.060)
First	1970	16.7	81.3
2-4	5750	48.6	80.8
5+	4108	34.7	79.9
Twin status			5.4 (0.020)
Single birth	11479	97.1	80.4

Multiple birth	349	2.9	86.2
Sex of child			0.3 (0.587)
Male	5963	50.6	80.2
Female	5865	49.6	80.9
Community literacy level			31.7 (<0.001)
Low	4216	35.6	79.3
Medium	4148	35.1	79.9
High	3464	29.3	82.9
Community socio-economic status			43.9 (<0.001)
Low	4361	36.9	79.3
Medium	3994	33.8	79.2
High	3473	29.3	83.7
Residence			37.0 (<0.001)
Urban	1007	8.5	85.4
Rural	10821	91.5	80.1

Multilevel binary logistic regression results on the predictors of healthcare seeking for childhood illnesses in Burundi

Table 2 shows the results on barriers to healthcare, individual and community factors are associated with healthcare access and seeking behaviours for childhood illnesses among childbearing women in Burundi. In the fully adjusted model after controlling for the effects of individual and community factors, it was found that women who perceived getting money for medical care for self as a big problem [AOR=0.82; CI=0.73-0.91] and considered going for medical care alone as a big problem [AOR=0.84; CI=0.73-0.96], had lower odds of seeking healthcare for their children, compared to those who considered these indicators as not a big problem. The results also showed that cohabiting mothers [AOR=0.86; CI=0.76-0.96], taking healthcare decisions alone [AOR=0.83; CI=0.71-0.97], women in female headed households [AOR=0.85; CI=0.74-0.98], mothers with children larger [AOR=0.86; CI=0.77-0.96] and smaller than average [AOR=0.76; CI=0.67-0.87], single birth children [AOR=0.65; 0.47-0.89], and women in rural areas [AOR=0.79; CI=0.63-0.99] had lower odds of seeking care for their children's illness, compared to those who were married, who do not take healthcare decisions alone, those in male headed households, had children with average size at birth, those with multiple births, and those in urban areas respectively (see Table 2).

Table 2: Multilevel binary logistic regression results on the predictors of healthcare seeking for childhood illnesses in Burundi

Variables	Model 0	Model I AOR [95%CI]	Model II AOR [95%CI]	Model III AOR [95%CI]
Getting permission for medical care for self				
Big problem		0.98 (0.80-1.21)		0.97 (0.79-1.20)
Not a big problem		1		1
Getting money for medical care for self				
Big problem		0.80 ^{***} (0.71-0.89)		0.82 ^{***} (0.73-0.91)
Not a big problem		1		1
Distance to facility for medical care for self				
Big problem		0.99 (0.87-1.11)		1.03 (0.91-1.16)
Not a big problem		1		1
Wanting to go for medical care alone				
Big problem		0.84 [*] (0.73-0.97)		0.84 [*] (0.73-0.96)
Not a big problem		1		1
Marital status				
Married		1		1
Cohabiting		0.85 ^{**} (0.76-0.95)		0.86 ^{**} (0.76-0.96)
Health care decision making capacity				
Alone		0.84 [*] (0.72-0.96)		0.83 [*] (0.71-0.97)
Not alone		1		1
Religion				
Christianity		0.70 [*] (0.51-0.96)		0.81 (0.59-1.13)
Islam		1		1
No religion		0.62 [*] (0.40-0.97)		0.74 (0.47-1.14)
Sex of household head				
Male		1		1

Female		0.87* (0.75-1.00)		0.85* (0.74-0.98)
Size of child at birth				
Larger than average		0.87** (0.78-0.96)		0.86** (0.77-0.96)
Average		1		1
Smaller than average		0.76*** (0.67-0.87)		0.76*** (0.67-0.87)
Twin status				
Single birth		0.65** (0.47-0.89)		0.65** (0.47-0.89)
Multiple birth		1		1
Community literacy level				
Low			0.88 (0.73-1.06)	0.91 (0.75-1.09)
Medium			0.86 (0.73-1.02)	0.87 (0.74-1.03)
High			1	1
Community socio-economic status				
Low			0.84 (0.69-1.03)	0.85 (0.70-1.04)
Medium			0.82* (0.67-0.99)	0.83 (0.69-1.00)
High			1	1
Residence				
Urban			1	1
Rural			0.76* (0.61-0.96)	0.79* (0.63-0.99)
Random effect result				
PSU variance (95% CI)	0.30 (0.23-0.39)	0.27 (0.20-0.35)	0.27 (0.21-0.36)	0.25 (0.19-0.33)
ICC	0.85	0.75	0.77	0.71
LR Test	$\chi^2=161.93$, p<0.001	$\chi^2=128.81$, p<0.001	$\chi^2=137.03$, p<0.001	$\chi^2=116.23$, p<0.001
Wald chi-square		85.77	35.95	113.23

Model fitness				
Log-likelihood	-5720.0	-5677.0	-5701.9	-5663.3
AIC	11444.1	11382.1	11414.7	11364.7
N	11828	11828	11828	11828

Discussion

The current study has shown that a complex and interrelated factors cut across barriers to healthcare access and healthcare seeking behaviours at the individual and community level for childhood illnesses among childbearing women in Burundi. According to the 2016/2017 Burundi DHS, preliminary analysis showed that 80.55% of childbearing women sought healthcare for their children's illnesses. The prevalence of healthcare seeking for childhood illness was higher than what was recorded in Gabon with 75.0% [25]. Disparity in socio-cultural factors could influence the difference in the prevalence of healthcare seeking for childhood illness among countries.

Many studies have identified access to money as a major barrier to healthcare seeking for childhood illnesses [26]. Women who had a big problem getting money for medical care for self were less likely to seek healthcare for their children's illnesses as compared to women who had no problem getting money for healthcare. This finding supports other studies conducted in Ethiopia [26] and Kenya, Niger and Nigeria [27] that financial problem was a barrier to healthcare seeking behaviour for childhood illness. Current finding lends support to other array of research that has established strong connection between wealth and various health outcomes. Women from the poorest wealth quintile or poorest households usually demonstrate considerable poorer maternal health outcomes in low- and middle – income countries [28,29,30,31]. Such women might prioritize and use their less finances on other pressing needs such as food for the family at the expense of accessing healthcare for their children. For countries within SSA that have health insurance schemes such as Ethiopia, Ghana, Kenya and Rwanda [32], the barrier to healthcare seeking for childhood illnesses may not be financial matters but the involvement of other associated costs such as the cost of transportation to the health facilities [33].

The findings showed that rural-urban differential has a significant association with mothers' healthcare seeking and healthcare access for their children's illnesses. Mothers in the rural areas reported lower likelihood of seeking healthcare for their children's illnesses as compared to their counterparts in the urban areas. This result is consistent with previous findings from Ethiopia [34] and Bangladesh [35] where mothers in the rural areas reported low healthcare seeking behavior for their children's illnesses. Inequality in the distribution of infrastructures might be a major reason accounting for this finding. Rural areas unlike urban areas are usually deprived settings, with poor and under-resourced facilities. Therefore, the lack of basic infrastructures such as healthcare facilities, poor transportation systems and road networks might determine the frequency and timing of seeking healthcare services [36,37,38,39]. Women in rural areas would have to spend longer time to access a health facility due to erratic transport systems that might even be too costly and may not be affordable to these rural women [40]. Other environmental

barriers such as topographical access to health facilities that are often dotted at the outskirts of these local communities might restrict women from seeking healthcare [41,42,43].

Women who took healthcare decisions alone had lower odds of seeking for healthcare for their children's illnesses as compared to their counterparts who did not take healthcare decisions alone. Women with ultimate decision-making autonomy might lack decisiveness in seeking and accessing healthcare for their children, a sign demonstrating lack of empowerment. Empowered women are often related to their desire to readily access more healthcare services [44]. Quite often, socio-cultural norms suggest that many women in sub-Saharan Africa depend on their male partners and other family members in taking critical family decisions, including seeking healthcare because of perhaps their low socio-economic standing [45,43].

Other findings indicate that cohabiting women were reported lower likelihood of seeking healthcare for their children's ailments as compared to married women. This finding is in line with a previous study in Ethiopia [23] where married women were more likely to seek healthcare for their children's diseases. Cohabiting women may be less economically empowered (i.e., financially unsecured) and might not also get the financial assistance to seek healthcare for their children's illnesses. Further, females who were household heads had the lower likelihood of seeking care for their children's illness. From a socio-cultural perspective, boys/men are mostly touted to be "bread winners" for their families so are usually educationally and economically empowered at the expense girls/women by their families in many sub-Saharan countries. This empowerment disparity means that majority of women as household heads might not be educationally (i.e., inability to recognize signs and symptoms of illness) and economically (i.e., less income for healthcare services) secured to initiate some key decisions affecting the family, hence are less likely to influence key health seeking behaviours [46,47]. The association between parity and healthcare access as well as seeking behaviour contradicts previous studies [37]. Considerable evidence suggests that women of high parity are less likely to utilise healthcare services or may limit number of health facility visits based on the assumption of being experienced with maternal services (sources required). The current finding means that factors such as availability and accessibility of health facilities, coupled economic reasons might be responsible for the noted results in Burundi, a country that has hugely been ravaged by prolonged war and still in the process of rebuilding [48]. Also, mothers with children larger and smaller than average were less likely to access and seek healthcare service in Burundi. Body image dissatisfaction of mothers on their children might determine the frequency and/ or restrict access to maternal healthcare for fear of social evaluation during facility visits [49].

Practical implications

The current study offers empirical evidence that efforts to improve women's socio-economic status are essential for health care accessibility. Essential interventions and services must ensure that women and children have unrestricted access to antenatal, newborn and postnatal care, and other healthcare services (e.g., skilled care during and after childbirth) at appropriate facilities. Burundi's existing governmental initiatives could target households with women belonging to less endowed population, especially in rural

areas to address the unmet need for healthcare service utilization. For example, lessening and/ or removal of all forms of user fees in government health care facilities would be productive towards the protection of households from expensive costs of illness, although such a strategy still involves extra resources to meet the likely increase in demand for health care and to ensure that the quality of care is enhanced and sustained [50]. Some practical interventions such as exclusive breastfeeding for infants up to six months, vaccines and immunization, oral rehydration therapy and zinc supplements to manage diarrhea as well as treatment for the major childhood illnesses can extensively be promoted across the country.

Since 2006, the government of Burundi in collaboration with international donors have introduced “pay-for-performance (P4P)” scheme which rewards hospitals and health facilities with regular payments determined by service utilization levels and performance on quality measures primarily to improve maternal and child health outcomes across the country (see [51] for details). This suggested improvement in the public health care system (i.e., quality care and availability of care) is likely to encourage women to seek care in the public sector without incurring higher costs. Other interventions such as rolling micro finance schemes that provide income for small and medium-scale businesses and encourage women to regularly save could also be implemented. Another key finding hinged on women’s less ability to make decisions concerning healthcare access. Therefore, partner communication and shared decision-making strategies should be encouraged to improve health care utilization. Within sub-Saharan Africa, socio-cultural norms encourage partners and other key family members (e.g., fathers/mothers-in-law, uncles) in decision-making in all spheres of life, including healthcare services. Additionally, women should be counseled their health and children’s needs through assertive skills (e.g., taking personal responsibility). Future research in Burundi could target the effectiveness of existing interventions for new policy directions if needed.

Strengths and limitations

The study has some strengths and limitations. The secondary data used for analysis was drawn from a nationally representative survey collected employing a two-stage stratified sampling technique. The analyses with discrete regression models using confidence intervals to determine the level of precision, provide more credible findings [52,53]. However, the cross-sectional nature of the survey limit causal inferences and noted findings should be interpreted with caution.

Conclusion

This study examined the barriers to healthcare access and seeking behaviours for childhood illness among childbearing women in Burundi. Findings suggest that Burundi should strengthen maternal health care regarding women’s accessibility and seeking behaviours, especially with residential consideration and among women from the poorest wealth quintile, those cohabiting and with lower parity. The Burundian government through multi-sectoral partnership should strengthen health systems (e.g., “pay-for-performance (P4P)” for maternal health and address structural determinants of women’s health by

creating favourable conditions to improve the status of women and foster their overall socioeconomic well-being. Providing interventions that improve women's socioeconomic status will have multiple effects and increased their ability to utilise maternal health care services. For example, key interventions could include small-medium micro finance schemes, especially in the rural areas to help women generate enough income to offset direct and indirect costs (e.g., transport, purchase of drugs) often associated health care utilization. Other maternal health promotion programmes (e.g., focus group counseling) should target sociocultural practices to improve women's decision making capacity toward maternity health care.

Declarations

Ethics approval and consent to participate

Ethics approval was not required for this study since the data is secondary and is available in the public domain. More details regarding DHS data and ethical standards are available at: <http://goo.gl/ny8T6X>.

Consent for publication

No consent to publish was needed for this study as the author did not use any details, images or videos related to individual participants. In addition, data used are available in the public domain.

Competing interests

AS is an Associate Editor for BMC Health Services Research

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Availability of data and materials

Data for this study were sourced from Demographic and Health surveys (DHS) and available here: <https://dhsprogram.com/what-we-do/survey/survey-display-463.cfm>

Authors' contributions

BOA and EB contributed to the study design and conceptualization. BOA, EB, JEH, AM, CA and EKA reviewed the literature and performed the analysis. BOA, AS, JEH, EB, AM, CA and EKA, FA, and TS provided technical support and critically reviewed the manuscript for its intellectual content. AS supervised the conduct of the study. JEH had final responsibility to submit for publication. All the authors read and amended drafts of the paper and approved the final version.

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Figures

Figure 1

Prevalence of healthcare seeking for childhood illnesses in Burundi.