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Determinants of poor access to health care among women of reproductive age in Sierra Leone: a cross-sectional study

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Abstract

Background Sierra Leone, like many developing countries, faces challenges in ensuring equitable access to healthcare, particularly for women of reproductive age. This women has specific healthcare needs related to sexual and reproductive health, maternal health, and family planning. Despite improvements in national healthcare coverage, disparities persist, with women of reproductive age, especially those in rural areas and lower socio-economic brackets, experiencing significant barriers to accessing essential services. The study examined the factors associated with poor access to healthcare among women in Sierra Leone.

Methods The study utilised the cross-sectional 2019 Sierra Leone Demographic Health Survey. The study included 15,574 women of reproductive age (15–49 years) in Sierra Leone. A mixed-effect multilevel binary logistic regression analysis was conducted, determining the factors associated with poor access to healthcare using a four-modeled approach. The results were presented as adjusted odds ratios (aOR) with a 95% confidence interval (CI).

Results From our study the proportion of poor access to healthcare was 71.9% [69.7,74.0] in Sierra Leone. Previously married women(divorced, separated, or widowed) [aOR = 1.74; 95% CI: 1.30, 2.34] had higher odds of poor access to healthcare than those never in a union. Women living in rural areas [aOR = 1.88; 95% CI: 1.30, 2.71] had higher odds of poor access to healthcare than those living in urban areas. Women with secondary [aOR = 0.74; 95% CI: 0.62, 0.89] and higher education [aOR = 0.48; 95% CI: 0.34, 0.68] had lower odds of poor healthcare access than those without education. Women who watch television [aOR = 0.70; 95% CI: 0.56, 0.86] had lower odds of poor access to healthcare than those who did not. Richer [aOR = 0.57; 95% CI: 0.42, 0.79] and Richest quintile women [aOR = 0.45; 95% CI: 0.32, 0.65] have lower odds of poor access to healthcare than women in the poorest quintile. Women living in the Western region [aOR = 0.38; 95% CI: 0.22, 0.65] have lower odds of poor access to healthcare than those living in the Eastern region.

Conclusion Our study revealed that poor access to healthcare is a significant issue in Sierra Leone. Women who were previously married (divorced, separated, or widowed), lived in rural areas, or had lower education levels faced higher odds of poor healthcare access. Conversely, women with higher education, greater wealth, watch television, and those residing in the Western region had significantly lower odds of poor healthcare access. These findings underscore the need for targeted interventions addressing socioeconomic, educational, and provincial disparities to improve healthcare access for women in Sierra Leone.

Keywords Healthcare, Access, Women, Reproductive-aged, Sierra Leone

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Introduction

Access to healthcare is an essential entitlement of every individual and a crucial factor that influences the results of one's health [1]. However, many people in low- and middle-income countries (LMICs) face significant barriers to accessing quality and affordable health services, especially women of reproductive age [1]. As per the World Health Organisation (WHO), maternal mortality rates in LMICs are still alarmingly high, contributing to 94% of the total maternal fatalities worldwide in 2017 [1]. Women of reproductive age encompass a critical population group for national health [2]. Their well-being directly impacts their health and influences pregnancy outcomes, newborn health, and overall family well-being [1]. Limited access to healthcare services for women of reproductive age can lead to a cascade of negative consequences, including increased maternal mortality and morbidity, unintended pregnancies, unsafe abortions, and compromised child health [2]. The increased rates can be partially due to other obstacles that worsen the situation, such as poor access and provision of healthcare services, inadequate utilisation of family planning services, malnutrition, and other associated issues [3–6].

Sierra Leone is classified as one of the most underdeveloped nations globally; the country challenged with a fragile healthcare system recovering from the civil war. Limited infrastructure, shortages of qualified healthcare personnel, and inadequate resources plague many health facilities, particularly in rural areas [7, 8]. Additionally, individuals living in rural areas, who comprise 59% of the population, have limited access to healthcare services [9, 10]. In addition, the allocation of health resources in the country is uneven, with the bulk of referral hospitals and over half of the overall staff being concentrated in Freetown, the nation's central city [8]. In 2010, the Sierra Leone government introduced the Free Health Care Initiative (FHCI) to address the significant rates of maternal and neonatal mortality in the country. This initiative removed all medical fees for pregnant and breastfeeding women, children under five years old, and Ebola survivors [11]. While access has improved, concerns remain about the quality of care provided. Also, despite the FHCI, geographical and socio-economic disparities persist. Women in rural areas and those from lower-income families still face challenges reaching facilities or overcoming cultural barriers [11].

Various studies have shown that problems in obtaining healthcare services are linked to factors such as the age of the mother, her occupation, wealth status, level of education, her husband's education, exposure to media, place of residence, health insurance coverage, and the number of children she has [12–18]. While the extent of healthcare accessibility issues is reported in the 2019 Sierra Leone Demographic Health Survey (SLDHS) [19], the specific factors contributing to these issues among women of reproductive age remain unknown. This study seeks to shed light on the factors hindering access to healthcare among women of reproductive age in Sierra Leone. Prior studies have explored various aspects of access to healthcare services in Sierra Leone. For instance, one study examined the effect of the National Emergency Medical Service (NEMS) on geographical accessibility and transport availability [20], while another investigated the impact of the free healthcare programme on the utilisation of maternal and child health services [9]. Additionally, studies have addressed inequalities in maternal healthcare use [21], barriers to healthcare in rural areas [22], and health workers' perspectives on the referral of women with obstetric complications [23]. While these studies provide valuable insights into specific aspects of healthcare access, they primarily focus on individual components such as geographical accessibility, maternal healthcare, or rural barriers. However, there remains a critical gap in understanding the broader, more comprehensive range of social, economic, and geographic factors influencing healthcare access among women of reproductive age in Sierra Leone. To address this gap, the present study examines the factors associated with poor access to healthcare among women of reproductive age in Sierra Leone. By identifying and analyzing these factors, this study provides a holistic perspective on healthcare access, contributing to the development of targeted interventions aimed at improving healthcare utilisation and promoting better health outcomes for women and their families.

Methods

Study sampling and participants

This cross-sectional study utilised the secondary data from the 2019 SLDHS, a nationally representative survey performed between May 2019 and August 2019 [19]. The SLDHS utilised a two-stage cluster sampling method, where the primary sampling units were the census enumeration regions and the secondary sample units were homes [19]. The enumeration areas were chosen from the sample frame of the 2015 population and housing census [19]. Sampling weights were computed by considering probabilities independently for each sampling stage and each cluster. A sample of 13,872 households, which accurately represents the population, was chosen [19]. The survey interviewers exclusively conducted interviews with the households that were pre-selected. To prevent bias, no substitutions or alterations to the pre-selected households were permitted during the implementation process. The 2019 SLDHS report [19] comprehensively explains the sampling procedure. The study included

15,574 women aged 15 and 49 in Sierra Leone. This study adhered to the Strengthening Reporting of Observational Studies in Epidemiology (STROBE) guidelines [24].

Variables

Outcome variable

The study's outcome variable, 'poor access to healthcare,' was measured based on women's self-reported severe problems in accessing healthcare. This variable was constructed using responses to four questions assessing specific access-related barriers: getting permission to go for treatment, getting money for treatment, distance to health facilities, and not wanting to go alone. Each question had two response options: 'a big problem' or 'not a big problem.' A woman was assigned a value of '1' (indicating poor access) if she reported at least one of these issues as 'a big problem,' and a value of '0' if she reported 'not a big problem' for all four questions. This dichotomized approach aligns with methodologies from previous studies [13–18] and was used in the final analysis to ensure clarity and comparability in assessing barriers to healthcare access.

Explanatory variables

The study examined sixteen explanatory variables. We identified and obtained those variables by their inclusion in the DHS data and by doing an extensive review of relevant literature [12–18]. Based on the hierarchical and complex nature of the DHS data, we segregated the variables into individual and contextual levels (household and community level variables) based on the literature [16]. The individual variables include age, religion, education level, employment status, health insurance coverage, marital status, the total number of children born, media exposure, and ethnicity. The contextual variables include the sex of the household head, wealth index, residence, and province.

Data analysis

The statistical analyses were performed utilising Stata version 17.0 (Stata Corporation, College Station, TX, USA). We used percentages with confidence intervals to summarise the factors associated with poor healthcare access among women in Sierra Leone. A Pearson chi-square analysis was performed to ascertain the distribution of the factors related to poor healthcare access across the explanatory variables. The findings were displayed in a table, which showed the percentage of the factors associated with poor healthcare access, their corresponding confidence intervals (CIs), and a p-value to indicate their significance level. The regression analysis included only the variables with a p-value less than or equal to 0.05. A mixed-effect multilevel binary logistic regression analysis was performed to investigate the factors associated with poor healthcare access. This study utilised a four-model method. Model I, which did not include any explanatory variables, revealed the changes in the factors associated with poor access to healthcare ascribed to the clustering at the principal sampling units (PSU). In Model II, the individual level variables were included, while in Model III, the contextual level variables were included. Model IV included all the explanatory variables. The mixed-effect regression analysis yielded results that included both fixed effects and random effects. The fixed-effect analysis revealed the correlation between the explanatory predictors and the factors associated with poor healthcare access. The results were reported as an adjusted odds ratio (aOR) and their corresponding 95% confidence intervals (CI). The random effect results, however, indicate the variations in the factors associated with poor healthcare access. All four models used the intra-cluster correlation coefficient (ICC) values to determine the variation. All the analyses were weighted, and the svyset command in Stata, which contains the sampling weights, one or more stages of clustered sampling, and stratification, was used to deal with the complex nature of the DHS dataset.

Results

Background characteristics of women in Sierra Leone

Table 1 displays the demographic attributes of women in Sierra Leone. Ages ranged from 15 to 19 for 22% of the women. The majority (45.5%) had no education, and a significant portion (76.7%) identified as Muslims. Nearly three quarters (69.0%) were employed, though the majority (85.6%) had never used the internet. The largest tribal group represented was Temne (35.2%). Regarding socioeconomic status, a little over one-fifth (23.5%) fell into the wealthier category, and a majority (54.0%) resided in rural areas.

Proportion of poor access to healthcare among women in Sierra Leone

Table 2 shows the bivariate analysis of poor access to healthcare among women in Sierra Leone. The national proportion of poor access to healthcare was 71.9% [69.7,74.0] in Sierra Leone. Poor access to healthcare was highest among women aged 45–49 years 79.4%, women with no education 80.9%, women who were previously married(divorced, separated, or widowed) 78.5%; women with four or more parity 80.5%, women who don't watch television 79.0%; women who were Sherbro by tribe 81.2%, poorest women 87.7%, women living in rural areas 85.3%, and women living in the Northwestern province 84.3%. All the explanatory variables except health

Table 1 Background characteristics of women in Sierra Leone ($n = 15,574$)

Variable	Weighted sample(n)	Weighted frequency(%)
Woman's age (years)		
15–19	3,427	22.0
20–24	2,629	16.8
25–29	2,728	17.5
30–34	1,942	12.5
35–39	2,224	14.3
40–44	1,337	8.6
45–49	1,288	8.3
Educational attainment		
No education	7,081	45.5
Primary	2,103	13.5
Secondary	5,724	36.8
Higher	666	4.2
Marital status		
Never in union	5,058	32.5
Married	9,107	58.5
Cohabiting	608	3.9
Previously married(divorced, separated, or widowed)	801	5.1
Religion		
Christians	3,621	23.3
Muslims	11,953	76.7
Current working status		
Not working	4,831	31.0
Working	10,743	69.0
Parity		
Zero	4,117	26.4
One	2,480	15.9
Two	2,215	14.2
Three	1,912	12.3
Four or more	4,850	31.2
Covered by health insurance		
No	14,954	96.0
Yes	620	4.0
Read newspaper or magazine		
No	14,330	92.0
Yes	1,244	8.0
Listen to radio		
No	8,653	55.6
Yes	6,921	44.4
Watch television		
No	11,143	71.6
Yes	4,431	28.4
Use Internet		
No	13,333	85.6
Yes	2,241	14.4
Ethnicity		
Creole	139	1.0
Fullah	576	3.8
Kono	680	4.4
Limba	1,361	8.7
Loko	313	2.0
Madingo	429	2.9
Mende	4,863	31.2
Sherbro	283	1.8
Temne	5,488	35.2
Korankoh	658	4.2
Others	784	5.0
Sex of household head		
Male	10,930	70.2
Female	4,644	29.8
Wealth index		
Poorest	2,738	17.6
Poorer	2,831	18.2
Middle	2,954	19.0
Richer	3,385	21.7
Richest	3,666	23.5
Place of residence		
Urban	7,163	46.0
Rural	8,411	54.0
Province		
Eastern	3,069	19.7
Northern	3,317	21.3
Northwestern	2,508	16.1
Southern	2,899	18.6
Western	3,780	24.3

insurance coverage showed significant associations with poor access to healthcare among women in Sierra Leone at $p < 0.05$.

Factors associated with poor access to healthcare among women in Sierra Leone

Fixed effect results

Previously married women(divorced, separated, or widowed) [aOR = 1.74; 95% CI: 1.30, 2.34] had higher odds of poor access to healthcare than those never in a union. Women living in rural areas [aOR = 1.88; 95% CI: 1.30, 2.71] had higher odds of poor access to healthcare than those living in urban areas. Women with secondary [aOR = 0.74; 95% CI: 0.62, 0.89] and higher education [aOR = 0.48; 95% CI: 0.34, 0.68] had lower odds of poor healthcare access than those without education. Women who watch television [aOR = 0.70; 95% CI: 0.56, 0.86] had lower odds of poor access to healthcare than those who

Table 2 Bivariable analysis of poor access to healthcare among women in Sierra Leone

Variables	Poor access to healthcare	*p*-value
Proportion	**71.9% [69.7,74.0]**	
Woman's age (years)		**< 0.001**
15–19	69.3 [66.5,72.1]	
20–24	67.5 [64.5,70.5]	
25–29	70.0 [67.0,72.8]	
30–34	74.2 [71.4,76.8]	
35–39	75.1 [72.2,77.8]	
40–44	74.9 [71.7,77.9]	
45–49	79.4 [76.1,82.3]	
Educational attainment		**< 0.001**
No education	80.9 [78.8,82.8]	
Primary	76.8 [73.5,79.9]	
Secondary	62.3 [59.2,65.4]	
Higher	42.6 [37.4,48.1]	
Marital status		**< 0.001**
Never in union	64.0 [61.0,66.8]	
Married	76.4 [74.4,78.3]	
Cohabiting	61.5 [55.4,67.2]	
Previously married(divorced, separated, or widowed)	78.5 [74.0,82.3]	
Religion		**< 0.001**
Christians	65.4 [62.1,68.5]	
Muslims	73.8 [71.5,76.1]	
Current working status		**< 0.001**
Not working	62.4 [59.2,65.4]	
Working	76.2 [74.0,78.2]	
Parity		**< 0.001**
Zero	65.1 [62.0,68.1]	
One	67.3 [64.1,70.3]	
Two	70.4 [67.1,73.5]	
Three	72.3 [69.4,75.1]	
Four or more	80.5 [78.5,82.3]	
Covered by health insurance		**0.668**
No	72.0 [69.7,74.1]	
Yes	69.9 [59.6,78.5]	
Read newspaper or magazine		**< 0.001**
No	74.1 [72.0,76.1]	
Yes	46.5 [40.8,52.1]	
Listen to radio		**< 0.001**
No	77.1 [74.9,79.1]	
Yes	65.4 [62.3,68.5]	
Watch television		**< 0.001**
No	79.0 [77.0,80.9]	
Yes	54.0 [49.7,58.2]	
Use Internet		**< 0.001**
No	76.5 [74.5,78.4]	
Yes	44.2 [39.2,49.2]	
Ethnicity		**< 0.001**
Creole	39.1 [26.9,52.8]	
Fullah	54.7 [47.1,62.1]	
Kono	78.5 [71.7,84.0]	
Limba	69.6 [63.8,74.8]	
Loko	66.7 [56.2,75.7]	
Madingo	58.7 [50.6,66.3]	
Mende	75.8 [72.9,78.5]	
Sherbro	81.2 [71.5,88.2]	
Temne	71.5 [67.9,74.9]	
Korankoh	79.1 [70.2,85.9]	
Others	66.8 [59.7,73.2]	
Sex of household head		**< 0.001**
Male	74.0 [71.7,76.2]	
Female	66.9 [63.7,70.0]	
Wealth index		**< 0.001**
Poorest	87.7 [85.0,90.0]	
Poorer	86.2 [83.5,88.4]	
Middle	82.4 [79.9,84.7]	
Richer	65.5 [61.6,69.2]	
Richest	46.4 [41.7,51.2]	**< 0.001**
Place of residence		
Urban	56.2 [52.5,59.8]	
Rural	85.3 [83.2,87.1]	
Province		**< 0.001**
Eastern	79.4 [75.5,82.7]	
Northern	80.2 [75.2,84.4]	
Northwestern	84.3 [81.2,86.9]	
Southern	81.5 [78.2,84.5]	
Western	42.9 [37.4,48.6]	

did not. Richer [aOR = 0.57; 95% CI: 0.42, 0.79] and Richest quintile women [aOR = 0.45; 95% CI: 0.32, 0.65] have lower odds of poor access to healthcare than women in the poorest quintile. Women living in the Western area [aOR = 0.38; 95% CI: 0.22, 0.65] have lower odds of poor access to healthcare than those living in the Eastern province (Table 3).

Random effects results

Table 3 indicates considerable variations in the factors associated with poor access to healthcare among women in Sierra Leone among the clusters ($\sigma 2 = 3.78$, 95% CI = 3.12 to 4.57) in model I. Approximately 53% of the proportion of poor access to healthcare was attributed to the variations between the clusters (ICC = 0.53). The between-cluster difference dropped to 48.0% in Model II, decreased to 40.0% in Model III, and marginally increased to 41.0% in Model IV. These ICC results suggest that the variations in poor access to healthcare

Table 3 Factors associated with poor access to healthcare among women in Sierra Leone

Variables	Model I Empty model	Model II aOR [95% CI]	Model III aOR [95% CI]	Model IV aOR [95% CI]
Fixed effect results				
Woman's age (years)				
15–19		1.00		1.00
20–24		1.04 [0.87,1.26]		1.07 [0.89,1.28]
25–29		1.17 [0.92,1.48]		1.23 [0.97,1.55]
30–34		1.05 [0.79,1.40]		1.13 [0.85,1.50]
35–39		0.88 [0.67,1.14]		0.95 [0.73,1.25]
40–44		0.82 [0.61,1.11]		0.89 [0.66,1.21]
45–49		0.90 [0.66,1.23]		0.98 [0.72,1.34]
Educational attainment				
No education		1.00		1.00
Primary		0.91 [0.76,1.10]		0.93 [0.78,1.13]
Secondary		0.68*** [0.57,0.82]		0.74** [0.62,0.89]
Higher		0.43*** [0.30,0.60]		0.48*** [0.34,0.68]
Marital status				
Never in union		1.00		1.00
Married		0.97 [0.81,1.17]		0.95 [0.80,1.14]
Cohabiting		0.96 [0.68,1.36]		0.96 [0.68,1.34]
Previously married (divorced, separated, or widowed)		1.71*** [1.27,2.30]		1.74*** [1.30,2.34]
Religion				
Christians		1.00		1.00
Muslims		1.18* [1.01,1.38]		1.14 [0.98,1.33]
Working status				
No		1.00		1.00
Yes		1.24* [1.04,1.48]		1.19 [1.00,1.42]
Parity				
Zero		1.00		1.00
One		1.01 [0.83,1.23]		0.99 [0.81,1.20]
Two		0.87 [0.71,1.08]		0.87 [0.70,1.07]
Three		0.91 [0.71,1.16]		0.88 [0.69,1.12]
Four or more		1.10 [0.85,1.41]		1.04 [0.81,1.34]
Read newspaper or magazine				
No		1.00		1.00
Yes		0.99 [0.76,1.28]		0.99 [0.77,1.28]
Listen to radio				
No		1.00		1.00
Yes		0.95 [0.80,1.12]		0.95 [0.80,1.13]
Watch television				
No		1.00		1.00
Yes		0.60*** [0.49,0.75]		0.70*** [0.56,0.86]
Use Internet				
No		1.00		1.00
Yes		0.80* [0.65,1.00]		0.85 [0.69,1.05]
Ethnicity				
Creole		1.00		1.00
Fullah		1.01 [0.43,2.38]		0.99 [0.42,2.33]
Kono		2.37* [1.05,5.32]		2.20 [0.98,4.95]
Limba		1.50 [0.67,3.36]		1.40 [0.63,3.09]
Loko		2.48 [0.98,6.30]		2.28 [0.91,5.75]

Table 3 (continued)

Variables	Model I Empty model	Model II aOR [95% CI]	Model III aOR [95% CI]	Model IV aOR [95% CI]
Madingo		1.21 [0.52,2.83]		1.18 [0.51,2.74]
Mende		1.45 [0.65,3.24]		1.27 [0.57,2.85]
Sherbro		2.06 [0.84,5.06]		1.93 [0.79,4.73]
Temne		1.46 [0.66,3.24]		1.37 [0.62,3.01]
Korankoh		1.54 [0.58,4.10]		1.27 [0.48,3.36]
Others		1.10 [0.50,2.44]		1.01 [0.46,2.21]
Sex of household head				
Male			1.00	1.00
Female			0.94 [0.80,1.11]	0.94 [0.80,1.10]
Wealth index				
Poorest			1.00	1.00
Poorer			0.86 [0.70,1.07]	0.88 [0.71,1.10]
Middle			0.74* [0.58,0.95]	0.80 [0.62,1.02]
Richer			0.49*** [0.36,0.67]	0.57*** [0.42,0.79]
Richest			0.30*** [0.21,0.43]	0.45*** [0.32,0.65]
Place of residence				
Urban			1.00	1.00
Rural			2.14*** [1.48,3.08]	1.88*** [1.30,2.71]
Province				
Eastern			1.00	1.00
Northern			1.41 [0.87,2.29]	1.48 [0.87,2.52]
Northwestern			1.39 [0.90,2.13]	1.37 [0.85,2.18]
Southern			1.35 [0.89,2.05]	1.45 [0.95,2.21]
Western			0.36*** [0.21,0.60]	0.38*** [0.22,0.65]
Random effect model				
PSU variance (95% CI)	3.78 [3.12, 4.57]	3.11 [2.56, 3.80]	2.26 [1.79, 2.71]	2.28 [1.90, 2.74]
ICC	0.53[0.48,0.58]	0.48[0.43,0.53]	0.40[0.36,0.45]	0.41[0.36,0.45]
Wald chi-square	Reference	249.11***	278.29***	426.90***
Model fitness				
Log-likelihood	−6936.806	−6757.3379	−6786.8325	−6668.7902
AIC	13877.61	13582.68	13597.67	13425.58
N	15574	15574	15574	15574
Number of clusters	576	576	576	576

1.00 = Reference category, *PSU* Primary Sampling Unit, *ICC* Intra-Class Correlation Coefficient, *AIC* Akaike Information Criterion

aOR adjusted odds ratios, *CI* Confidence Interval

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

can be attributed to the variances across the clusters. The AIC values exhibited a similar pattern to the ICC values, reaching their lowest point in model IV. Therefore, model IV was chosen as the most suitable model for analysing the factors associated with poor access to healthcare among women in Sierra Leone.

Discussion

The study examined the factors associated with poor access to healthcare among women in Sierra Leone. The study revealed that education, marital status, watching television, wealth index, place of residence and region were all associated with access to healthcare among women in Sierra Leone. The current study found that 71.9% of women in Sierra Leone had poor access to healthcare. The finding of our study is higher than the 56.0% reported in Sierra Leone [16]. The possible reason for the difference in the proportion of healthcare access between the previous study and the current study is the differences in survey years and study population. The high proportion of poor access to healthcare in Sierra Leone may be due to limited

healthcare infrastructure, insufficient hospitals, clinics, and qualified healthcare personnel, especially in rural areas lack of funding for essential medical supplies, equipment, and maintenance of facilities [25]. Many people live below the poverty line, making it difficult to afford healthcare services, even if available [26]. Limited understanding of health issues and available services can hinder people from seeking care [27]. Traditional beliefs and practices may sometimes discourage people from seeking modern medical care [28].

Our study revealed that previously married women(divorced, separated, or widowed) in Sierra Leone had higher odds of poor access to healthcare compared to women who have never been married. This finding aligns with prior investigations conducted in Tanzania [12] and Ethiopia [15]. Widows, divorcees, or separated women might face stigma within their communities, discouraging them from seeking healthcare, especially for sexual and reproductive health issues [29]. Further research might be needed to delve deeper into the underlying causes of this association.

Women living in rural areas of Sierra Leone face higher odds of poor access to healthcare compared to their urban counterparts. The results of our research align with the findings of earlier studies in East African countries [13], Gambia [14] and sub-Saharan Africa(SSA) [16]. Rural locations frequently exhibit a scarcity of healthcare facilities, and those that exist may be far away, making travel time and cost a significant barrier [30]. Public transportation in rural areas might be unreliable or expensive, further hindering access to distant facilities [31]. Healthcare professionals with the necessary qualifications, such as doctors and nurses, are often found in higher numbers in metropolitan regions, resulting in a shortage of staff in rural healthcare facilities [25]. Rural populations often have lower average incomes, making it harder to afford user fees or transportation costs associated with healthcare [31]. Lower literacy rates in rural areas can lead to a lack of awareness about health issues and available services [32].

Women in Sierra Leone with secondary or tertiary education had lower odds of poor access to healthcare compared to those with no education. This finding aligns with previous studies in Ethiopia [15], SSA [17], and Ghana [18]. Education can raise awareness about available healthcare services, including location, types of care offered, and how to access them [33]. Education can boost a woman's confidence in making decisions about her health, including seeking care when needed [34]. Education can empower women to question traditional practices that might discourage them from seeking healthcare [35].

Women in Sierra Leone who watch television had lower odds of poor healthcare access than those who don't. Television can be a powerful tool for disseminating public health campaigns and educational programs about various health topics. This can enhance women's consciousness regarding health concerns, signs of being vigilant, preventive actions, and the significance of getting medical attention [36]. Television broadcasts can inform women about the types of healthcare services available, where to find them, and how to access them [36]. This empowers them to take charge of their health.

The richer or richest Women in Sierra Leone had lower odds of poor access to healthcare than those who are poorest. The results of our research align with the findings of earlier studies in East African countries [13], Gambia [14], SSA [17] and Ghana [18]. Wealthier women have more financial resources to pay for healthcare services, user fees, medications, and transportation costs associated with seeking care [37]. They might be able to afford private healthcare facilities, which often have shorter wait times, more amenities, and potentially better-quality care than public facilities. Richer households might be more likely to have access to media like television or the Internet, which can provide valuable health information [38]. Wealthier women might have broader social networks that can provide information about healthcare options, share experiences, or offer practical support like childcare to facilitate healthcare visits [39].

Women in Sierra Leone living in the Western area had lower odds of poor healthcare access than those in the Eastern Region. The Western Region, which holds the capital, Freetown, has more healthcare facilities like hospitals, clinics, and specialists than the Eastern Region [20]. Essential medical supplies, equipment, and medications might be more readily available in Western Region facilities [20]. A larger pool of doctors, nurses, and other healthcare professionals might be concentrated in the Western Region, leading to shorter wait times and potentially better quality of care [25].

Policy and practice implications

The study's findings on poor access to healthcare among women of reproductive age in Sierra Leone highlight significant challenges for achieving Universal Health Coverage by 2030. The government and policymakers in Sierra Leone should Strengthen the healthcare system by building capacity, infrastructure, and workforce. Address social determinants of health through poverty reduction and educational initiatives. Prioritise equity by focusing on vulnerable groups like women in rural areas and previously married women. Leverage communication channels to raise awareness and empower women to seek healthcare. By implementing these recommendations, Sierra

Leone can move closer to achieving universal health coverage and ensuring all women of reproductive age have access to the essential healthcare services they need.

Strengths and limitations

One of the key strengths of the study is the use of the 2019 SLDHS, which collects data from a large, geographically diverse sample, allowing for generalisations about the entire country. The survey uses standardised methods across countries, enabling comparisons with other nations facing similar challenges. The SLDHS collects data on various factors, including demographics, socioeconomic status, and health behaviours. This allows for a comprehensive analysis of factors influencing access to care. The study, however, has some limitations. The SLDHS is a Cross-sectional design. It can't establish cause-and-effect relationships between variables. SLDHS is self-reported data, which can lead to biases.

Conclusion

The study found that a significant proportion of women of reproductive age in Sierra Leone have poor access to healthcare. Previously married people living in rural areas were found to be facing more significant challenges in healthcare access. Secondary/tertiary education, richer/richest wealth index, watching television and living in the Western area were associated with improved access to healthcare. The government and policymakers in Sierra Leone should improve living standards for women. Increase investment in healthcare infrastructure and services, particularly in rural areas. Improve public health campaigns to raise awareness about available healthcare services and empower women to seek care. Target outreach programs for previously married women to investigate the reasons behind the association between marital status and access to healthcare. Explore the role of media in promoting health literacy and access to care. By addressing these factors, Sierra Leone can create a more equitable healthcare system that improves access for all women of reproductive age in Sierra Leone.

Abbreviations

LMICs	Low- and middle-income countries
WHO	World Health Organization
FHCI	Free Health Care Initiative
EA	Enumeration area
AOR	Adjusted odds ratio
CI	Confidence interval
COR	Crude odds ratio
DHS	Demographic and health survey
SLDHS	Sierra Leone demographic health survey
OR	Odds ratio
VIF	Variance inflation factor
NEMS	National Emergency Medical Service
MoHS	Ministry of Health and Sanitation
NEMS	National Emergency Medical Service

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Authors' contributions

AO conceived the study. AO performed the data analysis and wrote the initial draft of the manuscript. PBJ and CB were responsible for interpreting and revising the manuscript's initial draft. All the authors reviewed and approved the final version of the manuscript.

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Data availability

The data set is openly available upon permission from the MEASURE DHS website (https://www.dhsprogram.com/data/available-datasets.cfm).

Declarations

Ethics approval and consent to participate

High international ethical standards are ensured during MEASURE DHS surveys, and the study protocol is performed in accordance with the relevant guidelines. The SLDHS 2019 survey protocol was reviewed and approved by the Sierra Leone Ethics and Scientific Review Committee and the ICF Institutional Review Board. Written informed consent was obtained from human participants, and written informed consent was obtained from legally authorised representatives of minor participants. This data set was obtained from the MEASURE DHS website (https://www.dhsprogram.com/data/available-datasets.cfm) after getting their permission, and no formal ethical clearance was obtained since we conducted a secondary analysis of publicly available data. Information on ethical procedures for the DHS survey may be obtained from https://dhsprogram.com/Methodology/Protecting-the-Privacy-of-DHS-Survey-Respondents.cfm.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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