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Research Article

Quantifying the Impact of Social Determinants on Preventive Healthcare Uptake in Sub-Saharan Africa

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Abstract

Preventive healthcare, which includes immunisations, screenings, antenatal care, and health checks, offers a proactive approach to reducing disease burdens and enhancing population wellness, especially in resource-limited settings like Sub-Saharan Africa (SSA). However, uptake remains uneven due to underlying social determinants of health (SDOH) such as wealth, education, and occupation. This study aims to quantify the impact of these determinants on preventive healthcare utilisation in SSA to guide evidence-based and equitable health strategies. A cross- sectional design was used, leveraging pooled secondary data from the Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) conducted between 2015 and 2022 across 12 SSA countries. Key social determinants—wealth index, education level, and occupational status—were analysed alongside the uptake of preventive services, including immunisation, antenatal visits, cancer screening, HIV testing, and blood pressure checks. Multivariate logistic regression was performed to derive adjusted odds ratios (AORs), controlling for demographic confounders. The results show a strong positive link between higher socioeconomic status and greater use of preventive services. For instance, full childhood immunisation rates stood at 87. 5% in the highest wealth quintile compared to 52. 1% in the lowest (AOR = 2. 68, p < 0. 001). Similarly, women with tertiary education had a 90. 2% antenatal care completion rate versus 60. 7% among uneducated peers (AOR = 3. 12, p < 0. 001). Adults who were formally employed were significantly more likely to have blood pressure checks (68. 1% vs. 39. 2%) and HIV testing (61. 7% vs. 35. 5%) than their counterparts in informal or agricultural work. The findings confirm that wealth, education, and occupation significantly influence access to preventive healthcare in SSA. Wealthier, educated, and formally employed individuals benefit more from preventive interventions due to better access to health information, stable income, and employment benefits. Conversely, informal workers and uneducated individuals face logistical, informational, and financial barriers that hinder their health- seeking behaviours. These disparities reflect deeper structural inequalities that require policy reforms and targeted health interventions. Social determinants of health crucially shape the landscape of preventive care in Sub-Saharan Africa. Without deliberate policy action, the most vulnerable populations—those who are poor, uneducated, or informally employed will remain underserved. Addressing this gap necessitates equity- focused reforms in health systems, investments in education and employment, and cross- sectoral collaboration. Ensuring universal and inclusive access to preventive services is essential not only for public health but also as a matter of social justice.

Keywords

Preventive Healthcare, Wealth Index, Education Level, Occupational Status, Immunization and Antenatal Visits

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1. Introduction

Preventive healthcare refers to services and interventions designed to avert illness and detect diseases early. These include immunisations, health screenings, antenatal care, family planning, and regular health check-ups [9]. Unlike curative care, which addresses established illness, preventive healthcare operates proactively, reducing the incidence of diseases and lowering long-term healthcare costs while simultaneously promoting wellness across populations [1]. In regions with limited resources, such as Sub-Saharan Africa (SSA), this form of care is essential not only for health improvement but also for socio-economic sustainability.

Sub-Saharan Africa is home to some of the world's most fragile health systems and has a disproportionate burden of disease, including malaria, HIV/AIDS, tuberculosis, and a rising tide of non-communicable diseases. As [3] have emphasised, preventive healthcare is not merely an ideal in this region—it is a necessity. The combination of high morbidity, low healthcare infrastructure density, and limited fiscal resources underscores the urgent need to prioritise interventions that prevent disease before it occurs. Yet despite its potential, uptake of preventive healthcare remains uneven and often inaccessible to the populations who need it most.

A growing body of evidence suggests that social determinants of health (SDOH)—including wealth, education, and occupation—are major drivers of disparities in healthcare access. The [10] clearly articulates that access to healthcare cannot be improved through clinical services alone; rather, it is deeply shaped by the social conditions in which people are born, grow, live, work, and age. These social determinants significantly influence the ability and willingness of individuals to seek out preventive services. For example, access to timely immunization or antenatal visits is often more dependent on socioeconomic status than on proximity to a health facility.

The inequalities are deeply pronounced. People in higher-income group tend to access preventive care more frequently than their lower-income counterparts, largely due to affordability, information access, and transportation advantages [8]. Similarly, education plays a transformative role by equipping individuals with the knowledge and health literacy necessary to make informed choices about their well-being. Educated individuals are more likely to understand the long-term benefits of preventive measures, adhere to routine health check-ups, and recognise symptoms early. In essence, education fosters a mindset of health responsibility and proactivity [4].

Occupational status also profoundly affects healthcare utilisation. It is not just a matter of income but also of stability, job benefits, and exposure to health information. For instance, workers in the formal sector typically enjoy regular incomes, structured work hours, and employer-sponsored health insurance—all of which increase the likelihood of engaging with preventive services [5, 6]. On the other hand, those in the informal economy or engaged in subsistence agriculture often face irregular income, job insecurity, and geographic isolation, all of which create substantial barriers to accessing even the most basic health interventions.

These three determinants, wealth, education, and occupation, do not operate in isolation. Instead, they interact to reinforce patterns of inequality. As the [11] points out, these overlapping disadvantages can create a cascading effect that pushes the most marginalised individuals even further away from the healthcare system. For instance, an uneducated woman working informally in a rural setting may lack both the resources and the autonomy to seek antenatal care, even when such services are available at no cost. Her low income may prevent her from affording transportation; her lack of education may limit her awareness of health risks; and her occupational insecurity may dissuade her from taking time off to visit a clinic.

Addressing such inequalities is critical—not only from an ethical standpoint but also for achieving global health objectives such as the Sustainable Development Goals (SDGs). Specifically, SDG 3 calls on nations to "ensure healthy lives and promote well-being for all at all ages" [12]. Without an intentional strategy to dismantle the structural and social barriers that prevent equitable access to preventive services, efforts to achieve this goal will fall short. The risk is a bifurcated health system in sub-Saharan Africa: one in which preventive care remains a privilege for the the utilization of preventive socioeconomically advantaged, while the rest of the population relies on overburdened curative services, often sought too late.

Thus, this article aims to quantify the influence of social determinants on preventive healthcare uptake in sub-Saharan Africa. This aim is achieved through the following objectives:

1) To quantify the impact of wealth disparities on healthcare services such as immunisations, screenings, and antenatal care in sub-Saharan Africa.
2) To examine how varying levels of educational attainment affect awareness, accessibility, and uptake of preventive healthcare interventions across the region.
3) To evaluate the influence of occupational categories on access to and use of preventive health services.

For policymakers, NGOs, development partners, and public health actors, these findings offer a valuable evidence base to inform equitable health strategies. An understanding of how socio-economic variables drive preventive care utilisation can help ensure that interventions are not only accessible but also equitable. More importantly, it can enable a reorientation of

health systems in SSA from a curative model to one that is preventive, inclusive, and sustainable.

2. Method

2.1. Study Design

This study employed a cross-sectional design using secondary data drawn from the Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) conducted between 2015 and 2022.

2.2. Study Area

Sub-Saharan Africa consists of 46 countries with diverse cultures, economies, and health systems. The region faces significant challenges, including poverty, limited healthcare access, and a high burden of disease. These issues, alongside disparities in education and employment, make it an important focus for research on social determinants and public health.

2.3. Study Population

The sample consisted of adult respondents aged 18–49 years, totaling over 150,000 individuals across 12 Sub-Saharan African (SSA) countries, including Nigeria, Ghana, Kenya, Uganda, Ethiopia, and Rwanda.

2.4. Study Technique

A multistage sampling technique was used to ensure national representativeness. Three primary social determinants were analysed: wealth index, education level, and occupational category. The wealth index was determined based on household assets and categorised into quintiles. Education was stratified into no formal education, primary, secondary, and tertiary education. Occupation was categorised into formal employment, informal sector work, agriculture, and unemployment.

2.5. Instrument of Data Collection

This study utilised secondary data from the Demographic and Health Surveys (DHS), which provide standardised data on preventive healthcare use and social factors like wealth, education, and occupation. The wealth index was based on household assets. Additional data were sourced from the World Bank and WHO databases. These instruments offered credible, regionally relevant data to assess how social determinants affect preventive healthcare uptake across Sub-Saharan Africa. The dependent variable was uptake of preventive healthcare, measured through indicators such as:

1) Routine immunisations (e.g., tetanus, HPV)
2) Antenatal care attendance
3) Cancer screening (cervical and breast)
4) HIV testing and counseling
5) Blood pressure and glucose checks

2.6. Data Analysis

This involved descriptive statistics and multivariate logistic regression using STATA version 17. Adjusted odds ratios (AORs) with 95% confidence intervals (Cis) were calculated to determine associations between social determinants and preventive service use, controlling for confounders such as age, gender, residence, and marital status.

2.7. Ethical Considerations

Ethical clearance was obtained from the data-issuing institutions. The use of anonymized secondary data minimized risk to participants.

3. Results and Discussions

Table 1. *Association Between Social Determinants and Preventive Healthcare Uptake in Selected Sub-Saharan African Countries.*

Social Determinant	Preventive Service	High Level (% Uptake)	Low Level (% Uptake)	AOR	95% Confidence Interval	p-value
Wealth Status	Full Childhood Immunization	87.5%	52.1%	2.68	2.10 – 3.41	<0.001
	ITN Use (Households)	73.4%	59.0%	1.56	1.22 – 2.01	0.002
Education	> Four Antenatal Visits	90.2%	60.7%	3.12	2.45 – 3.97	<0.001
	Cervical Cance Screening	45.8%	19.6%	2.84	1.94 – 4.17	<0.001

Social Determinant	Preventive Service	High Level (% Uptake)	Low Level (% Uptake)	AOR	95% Confidence Interval	p-value
Occupation	Blood Pressure Checks (Adults)	68.1%	39.2%	2.21	1.67 – 2.93	<0.001
	HIV Testing in Last 12 Months	61.7%	35.5%	2.05	1.52 – 2.75	<0.001

High Level = Highest wealth quintile, tertiary education, or formal employment.
Low Level = Lowest wealth quintile, no education or primary only, informal or agricultural work.
AOR = Adjusted Odds Ratio
Data derived from pooled DHS datasets (2015–2022) from 10 Sub-Saharan African countries.

The study findings confirm the significant impact of social determinants—wealth, education, and occupation—on preventive healthcare uptake in Sub-Saharan Africa. Immunisation coverage among children was higher in the richest households (87.5%) compared to the poorest (52.1%), with an adjusted odds ratio (AOR) of 2.68 ($p<0.001$), indicating that economic advantage enhances access to preventive services. Similar disparities were observed in insecticide-treated net (ITN) usage—73.4% among the wealthiest, compared to 59.0% among the poorest households. Individuals in the lowest quintiles often forgo preventive care due to financial constraints, leading to delayed diagnoses and preventable illnesses [10].

Educational status strongly influenced maternal care: 90.2% of women with a tertiary education completed four or more antenatal visits, compared to 60.7% of uneducated women (AOR = 3.12; $p<0.001$). This is because the educated women understand the importance of antenatal visits, child immunisation schedules, and early screening for cervical cancer [7]. Cervical cancer screening rates were 44.8% among educated women, versus 18.9% among those without formal education.

Occupational type also revealed disparities—formally employed individuals reported 68.1% blood pressure screening and 61.7% HIV testing, compared to 39.2% and 35.5%, respectively, among those in informal/agricultural work. These statistically significant differences reflect entrenched social inequities, reinforcing the need for inclusive health policies that target the most vulnerable populations through education, economic empowerment, and specific outreach. Time costs of accessing services are higher for informal workers, who risk losing daily earnings if they take time off for health appointments [2].

4. Conclusion and Recommendations

4.1. Conclusion

This study provides empirical evidence that wealth, education, and occupation are decisive factors in preventive healthcare utilisation across Sub-Saharan Africa. The findings highlight a pressing public health challenge: the most vulnerable populations—poor, uneducated, and informally employed individuals—remain underserved despite being the most in need. A preventive care system cannot function effectively in isolation from broader social policies. To close the gap in healthcare utilisation, policymakers must adopt an equity-driven approach that addresses the upstream social determinants of health. Universal Health Coverage, though critical, must be complemented by investments in education, job security, and targeted outreach to marginalised communities. by acknowledging and acting upon the interdependence of social structures and health behaviour, Sub-Saharan Africa can achieve health equity and reduce the preventable disease burden.

4.2. Recommendations

1) Governments must ensure that national health insurance programs explicitly cover preventive services. Subsidising preventive care for the poor and informal workers can reduce long-term healthcare costs and disease burden.
2) Ministries of Health should develop culturally appropriate and linguistically accessible health education campaigns targeting uneducated and rural populations. These campaigns should promote the value of screenings, immunisations, and routine checks.
3) Formal employment should include regular health screenings as part of workplace wellness programs. Policies should also encourage small businesses and informal sector unions to engage in community-based health initiatives.
4) Tackling SDOH requires partnerships beyond the health sector. Ministries of education, labour, transportation, and finance must work jointly to address the structural causes of health inequities.

Abbreviations

SSA	Sub-Saharan Africa
SDOH	Social Determinants of Health
AOR	Adjusted Odds Ratio
SDGs	Sustainable Development Goals

DHS	Demographic and Health Surveys
MICS	Multiple Indicator Cluster Surveys
WHO	World Health Organisation

Author Contributions

Whitney Adaeze Onuorah is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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