UTS UNIVERSITY OF TECHNOLOGY SYDNEY

Equity in Access to Quality Maternal and Child Health Services in sub-Saharan Africa

By Firew Tekle Bobo

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Doctor of Philosophy

Under the supervision of Professor Andrew Hayen, Professor Angela Dawson, Dr. Augustine Asante, and Professor Mirkuzie Woldie

University of Technology Sydney

Faculty of Health

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Certificate of Original Authorship

I, Firew Tekle Bobo declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Public Health, Faculty of Health at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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Abstract

Background: Maternal health services, such as antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and child vaccination, have been instrumental in reducing morbidity and mortality rates among women and children globally. However, despite their proven efficacy, access to and utilisation of these services in low- and lower-middle-income countries (LLMICs) remain limited. While much attention has been given to monitoring and addressing coverage disparities, there has been a notable lack of evidence on disparities in access to quality care. This study aimed to assess the status of equity in access to quality maternal and child health (MCH) services in sub-Saharan Africa (SSA).

Methods: This study analysed the SSA countries that had the latest Demographic and Health Surveys (DHS) conducted between 2013 and 2020. Socioeconomic inequalities were examined using three equity analysis methods: rate/ratio, concentration curve, and concentration index. Multilevel analysis that adjusts for clusters, countries, and sampling weights were used to explain inequalities. In addition, decomposition analysis was used to explain inequalities.

Results: The first study assessed inequalities in quality ANC. The results revealed a significant gap between the quantity of ANC contacts received by women and the quality of ANC services provided during those contacts, with just over half (54.4%) receiving four or more ANC contacts, while only 21% received quality ANC services. The second study analysed spatial patterns and inequalities in SBA and caesarean section. The proportion of SBA varied greatly across countries, with Chad having the lowest rate at 24.3% and South Africa having the highest at 96.7%. In ten out of 25 countries, the rate of caesarean delivery was less than 1% for the poorest quintile, while in nine countries, it was more than 15% for the richest quintile. The third study evaluated the continuum of care for maternal health services. About 89% of women reported

having at least one ANC contact, but only 30% of women received the recommended care package that includes four or mere ANC contacts, SBA, and PNC. Nearly 9% of women reported not having contact with the health system during pregnancy or childbirth; this ranged from 0.1% in Burundi to 34% in Chad. The fourth study investigated inequalities in child vaccination across 25 SSA countries. The research findings showed that 56.5% of children received all recommended vaccinations, 35.1% had incomplete vaccinations, and 8.4% had received no vaccinations, with a disproportionate concentration of zero-dose vaccination among the poor, while full vaccination coverage was more common among wealthier households in many countries. The fifth study revealed an increase in the proportion of children who received full vaccination in Ethiopia, rising from 24.6% in 2011 to 38.6% in 2016, with higher coverage among children from wealthier households. Overall, this research highlighted the existing disparities in maternal health and child vaccination, influenced by various factors such as wealth, education, access to media, place of residence, as well as maternal factors such as age and parity.

Conclusions: Progress toward comprehensive MCH coverage has been insufficient at both the national and across equity dimensions, impeding progress toward universal health coverage (UHC). Ensuring equitable coverage of MCH services is critical to achieving UHC. Therefore, when planning interventions and assessing progress, prioritising equity considerations is essential. Regular evaluations of health inequality can serve as a diagnostic tool to identify and address the needs of vulnerable populations. To further improve MCH services in SSA, it is essential to address areas with limited coverage and tailor services to meet the specific needs of marginalized groups. Additionally, special attention must be given to child immunisation to maintain previous progress and extend coverage to all demographics.

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Publications included in this thesis

Peer-Reviewed Papers

1. **Bobo F.T.**, Asante A, Woldie M, Hayen A. Poor coverage and quality for poor women: Inequalities in quality antenatal care in nine East African countries. Health Policy and Planning. 2021;36(5):662-72.

2. **Bobo F.T.**, Asante A, Woldie M, Dawson A, Hayen A. Spatial patterns and inequalities in skilled birth attendance and caesarean delivery in sub-Saharan Africa. BMJ Global Health. 2021;6(10).

3. **Bobo, F. T.**, Asante, A., Woldie, M., Dawson, A., & Hayen, A. (2022). Child vaccination in sub-Saharan Africa: Increasing coverage addresses inequalities. Vaccine, 40(1), 141-150. doi:10.1016/j.vaccine.2021.11.005

4. **Bobo, F.T**. & Hayen, A. 2020, 'Decomposition of socioeconomic inequalities in child vaccination in Ethiopia: results from the 2011 and 2016 demographic and health surveys', BMJ Open, vol. 10, no. 10, p. e039617.

Submitted manuscripts included in this thesis

Bobo F.T., Asante A, Woldie M, Dawson A, Hayen A. Evaluating equity across the continuum of care for maternal health services: analysis of household surveys from 25 sub-Saharan African countries. International Journal for Equity in Health. (Under review)

Conference abstracts

1. **Bobo F**, Asante A, Woldie M, Dawson A, Andrew H, (2022) Evaluating equity across the continuum of care for maternal health services: analysis of household surveys from 25 sub-Saharan African countries "15th Annual Conference on the Science of Dissemination and Implementation in Health" December 11-14, 2022

2. **Bobo F**, Asante A, Woldie M, Dawson A, Andrew H, (2022) Inequalities in access to quality Antenatal Care in nine east African countries "15th Annual Conference on the Science of Dissemination and Implementation in Health" December 11-14, 2022,

3. **Bobo FT.** Asante A, Woldie M, Dawson A, Hayen A. Inequalities in quality antenatal care in nine East African countries. Sixth Global Symposium on Health Systems Research, 08-12 November 2020

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Media articles related to this thesis

1. **Bobo F**, Hayen A. Dawson A. December 9, 2021, Addressing Inequalities in Access to Quality Maternal and Child Health Services in Sub-Saharan Africa. Intouch Public Health. https://intouchpublichealth.net.au/addressing-inequalities-in-access-to-quality-maternal-and-child-health-services-in-sub-saharan-africa/

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3. **Bobo F**, Hayen A. Dawson A. Asante A, Woldie M, November 16, 2021. Accessing maternal healthcare in sub-Saharan Africa. UTS News in Health https://www.uts.edu.au/about/faculty-health/news/accessing-maternal-healthcare-sub-saharan-africa

4. **Bobo F**, Asante A, Woldie M, Hayen A. April 23, 2021. Quality antenatal care in East Africa. UTS News in Health https://www.uts.edu.au/about/faculty-health/news/quality-antenatal-care-east-africa

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List of acronyms

ANC	Antenatal care
ANC 4+	Four or more antenatal care visits
BCG	Bacille Calmette-Guérin vaccine
CCI	Composite coverage index
CI	Confidence interval
CoC	Continuum of care
DHS	Demographic and Health Survey
DTP3	Third dose of diphtheria-tetanus-pertussis vaccine
LLMIC	Low- and -lower middle-income country
LMIC	Low-income and middle-income country
MDG	Millennium development goals
OPV3	Third dose of oral polio vaccine
OR	Odds ratio
PNC	Postnatal care
RR	Risk ratio
SBA	Skilled birth attendance
SDG	Sustainable Development Goal
SSA	Sub-Saharan Africa
UHC	Universal health coverage
UN	United nations
WHO	World Health Organization