ISSN 2475-529X

Research Article

Journal of Nursing & Healthcare

Social Determinants of Maternal and Child Health Outcomes in Busia County, Kenya: Implications for Nursing Practice and Health Systems Strengthening

Dr. William Okedi[1*], Anne Sogoli[1], Emanuel Luvai[2] and Willis Mulaa[3]

[1]*School of Health Sciences, Alupe University, Busia, Kenya*

[2]*Department of Health and Sanitation, Busia County, Busia, Kenya*

[3]*Akukuranut Trust, Busia County, Kenya*

[*]Corresponding Author
William Okedi, School of Health Sciences, Alupe University, Busia, Kenya.

Submitted: 2026, Feb 06; **Accepted:** 2026, Mar 06; **Published:** 2026, Mar 12

Citation: Okedi, W., Sogoli, A., Luvai, E., Mulaa, W. (2026). Social Determinants of Maternal and Child Health Outcomes in Busia County, Kenya: Implications for Nursing Practice and Health Systems Strengthening. *J Nur Healthcare, 11*(2), 01-06.

Abstract

Background: *Persistent maternal and child health (MCH) inequities in low- and middle-income countries are driven not only by service delivery gaps but also by structural social determinants of health (SDOH), including housing, water and sanitation, poverty, and governance fragmentation. In Kenya's devolved health system, county governments bear primary responsibility for service delivery, yet multisectoral coordination remains uneven. Generating local evidence on household-level determinants is critical for informing county policy and strengthening primary health care systems.*

Aim: *To assess household- and system-level social determinants influencing maternal and child health in Busia County, Kenya, and to identify policy and governance implications for nursing practice and county health systems strengthening.*

Methods: *A cross-sectional mixed-methods study was conducted between May and June 2025 across four sub-counties of Busia County. Data were collected from 103 households using a structured observational checklist covering five SDOH domains: housing quality, water and sanitation (WASH), access to health services, health behaviours, and community environment. Fifteen Key Informant Interviews with county officials, health managers, and civil society actors examined governance, financing, and intersectoral coordination barriers. Quantitative data were analysed descriptively using SPSS (Version 26), while qualitative data were thematically analysed and triangulated.*

Results: *Structural vulnerabilities—including semi-permanent housing, inadequate WASH infrastructure, and persistent financial constraints—were widespread. Although geographic access to facilities was relatively adequate, effective utilisation of antenatal, delivery, and postnatal services was constrained by indirect costs, transport limitations, and weak cross-sector coordination. Community health structures were active but insufficiently embedded within formal county planning and budgeting frameworks.*

Conclusion: *Improving maternal and child health in Busia County requires policy shifts beyond facility expansion toward integrated, multisectoral action. Strengthening nurse-led primary health care, institutionalising interdepartmental coordination, aligning WASH and health investments, and embedding community health structures within county governance and financing mechanisms are critical for advancing equitable MCH outcomes under devolution.*

Keywords: Maternal and Child Health (MCH), Social Determinants of Health (SDOH), Devolution, Universal Health Coverage, County Health Governance, Implications for Policy and Nursing Practice

1. Introduction

Maternal and child health (MCH) remains a central indicator of health system performance and socio-economic development globally. Despite substantial progress over the past two decades, preventable maternal and child morbidity and mortality persist, particularly in sub-Saharan Africa. According to the World Health Organization (2023), social and environmental conditions account for a substantial proportion of health inequities, underscoring that clinical services alone are insufficient to achieve sustainable improvements in maternal and child outcomes (World Health Organization [WHO], 2023).

The social determinants of health (SDOH)—including housing quality, water and sanitation, education, income, food security, and transport—shape exposure to risk, health-seeking behaviour, and continuity of care. The WHO Commission on Social Determinants of Health framework emphasizes that structural drivers such as governance, economic policies, and social stratification influence intermediary determinants like living conditions and access to services, which in turn affect maternal and child health outcomes (WHO, 2023).

In Kenya, maternal mortality and under-five morbidity remain unevenly distributed across counties. The most recent national survey data from the Kenya National Bureau of Statistics indicate persistent disparities in skilled birth attendance, antenatal care completion, child nutrition, and WASH access across regions (Kenya National Bureau of Statistics [KNBS] & ICF, 2023). County-level data show that rural and border counties continue to experience structural disadvantages linked to poverty, infrastructure deficits, and environmental health risks. Health sector reforms aimed at advancing Universal Health Coverage (UHC) have intensified in recent years. The transition from the National Hospital Insurance Fund (NHIF) to the Social Health Authority in 2023 marked a major policy shift intended to expand financial protection and equity in access to essential services (Government of Kenya, 2023). However, emerging analyses suggest that financial coverage reforms alone cannot overcome entrenched structural barriers such as unsafe water sources, poor sanitation, transport constraints, and fragmented intersectoral coordination (Barasa et al., 2024).

Busia County, located along the Kenya–Uganda border, presents a context where these social determinants intersect. The county is predominantly rural, with significant cross-border mobility, subsistence agriculture, and pockets of high poverty. County health profiles indicate ongoing challenges in child nutrition, WASH infrastructure, and equitable maternal health service utilization (KNBS & ICF, 2023). Border dynamics further complicate continuity of care, disease surveillance, and social protection mechanisms. Recent implementation research in Kenya has demonstrated that integrated interventions linking WASH, community health systems, and maternal health services yield stronger reductions in child morbidity than vertical approaches (Kimani-Murage et al., 2024). These findings reinforce the importance of contextual, household-level assessments to inform multisectoral planning at county level.

Despite growing recognition of SDOH in national and global policy discourse, there remains limited localized empirical evidence from western Kenya that systematically triangulates household environmental conditions with governance and service delivery perspectives. In particular, few studies in Busia County have combined direct household observation with qualitative insights from health managers and civil society actors to inform practical systems strengthening strategies. This study therefore assessed household-level social and environmental determinants—including housing conditions, WASH infrastructure, access to health services, health behaviours, and community environment—in four sub-counties of Busia County. By triangulating quantitative findings with key informant perspectives, the study sought to generate context-specific evidence to inform nursing practice, public health programming, and multisectoral health systems strengthening.

2. Methods

2.1Study Design

A cross-sectional descriptive mixed-methods study was conducted between May and June 2025 in Busia County, Kenya. The study combined quantitative household assessments with qualitative key informant interviews (KIIs) to examine social determinants influencing maternal and child health (MCH) outcomes.

2.2Study Setting

The study was carried out in four sub-counties: Teso South, Butula, Nambale, and Teso Central. Busia County is predominantly rural and borders Uganda, with significant cross-border mobility. Livelihoods are largely agrarian, and health services are delivered through a tiered system comprising community health units, dispensaries, health centres, and referral facilities.

2.3Study Population and Sampling

2.3.1 Quantitative Component

The study population comprised households with women of reproductive age (15–49 years) and/or children under five years residing in the selected sub-counties. A multi-stage sampling approach was applied. First, four sub-counties were purposively selected to ensure geographic and service-delivery variation. Second, community health units within each sub-county were selected in collaboration with sub-county health management teams. Third, households were selected using systematic sampling from community health volunteer household registers. Sampling intervals were calculated by dividing the number of eligible households by the allocated sample per unit.

A total of 103 households were included in the analysis.

2.4 Qualitative Component

Fifteen key informants were purposively selected based on their involvement in maternal and child health and related social determinants. Participants included county and sub-county health officials, public health officers, nursing officers, community health promoters, representatives from water and sanitation departments, and civil society organisations. Selection was guided by role relevance and experience in MCH programming.

3. Data Collection

3.1 Household Observational Checklist

A structured household observational checklist was developed based on the WHO social determinants of health framework and national public health guidelines. The tool captured five domains:

1. Housing conditions: construction materials (roof, wall, floor), ventilation, crowding (persons per sleeping room), and kitchen separation.
2. Water, sanitation, and hygiene (WASH): main water source, distance to water source, sanitation facility type, handwashing facility availability, and solid waste disposal practices.
3. Access to health services: distance to nearest facility, transport availability, health insurance coverage, and reported utilization of antenatal and child health services.
4. Health behaviours: mosquito net use, handwashing practices, and immunization status (self-reported).
5. Community environment: drainage systems, stagnant water presence, waste accumulation, and environmental safety concerns.

Data were collected through direct observation supplemented by structured respondent verification. Enumerators underwent two days of training covering tool administration, observation standardization, consent procedures, and data recording protocols. A pilot test was conducted in a neighboring sub-county to refine clarity and sequencing of items.

3.2 Key Informant Interviews

A semi-structured interview guide explored:

- Perceived social determinants affecting MCH
- Barriers to service access and delivery
- Intersectoral coordination
- Governance and policy challenges
- Recommended system-level interventions

Interviews were conducted in English or Kiswahili, lasted 45–60 minutes, and were audio-recorded with consent. Field notes were taken to capture contextual observations.

3.3 Data Management and Analysis

3.3.1 Quantitative Analysis

Data were entered into Microsoft Excel and exported to IBM SPSS Statistics version 26 for analysis. Data cleaning included range checks, verification of missing values, and logical consistency checks. Descriptive statistics were generated, including frequencies and proportions for categorical variables and means with standard deviations for continuous variables. WASH variables were categorized as "improved" or "unimproved" based on WHO/UNICEF Joint Monitoring Programme definitions. Composite indicators (e.g., WASH adequacy) were constructed by aggregating relevant binary indicators. Internal consistency of multi-item indices was assessed using Cronbach's alpha.

3.4 Qualitative Analysis

Audio recordings were transcribed verbatim and cross-checked against field notes. A thematic analysis approach was applied following six steps: familiarization, initial coding, searching for themes, reviewing themes, defining and naming themes, and reporting. Two researchers independently coded transcripts to enhance credibility. Coding discrepancies were discussed and resolved through consensus. Themes were derived inductively and aligned with social determinant domains. Qualitative findings were triangulated with quantitative results to identify convergence and contextual explanations for observed patterns.

3.5 Quality Assurance

Quality control measures included tool pre-testing, standardized enumerator training, daily field supervision, and regular debrief meetings. Quantitative data entry included double-check verification. Triangulation across data sources strengthened internal validity.

3.6 Ethical Considerations

Ethical approval was obtained from the Maseno University Ethics Review Committee. Administrative clearance was granted by the Busia County Department of Health.

Written informed consent was obtained from all participants. Participation was voluntary, and confidentiality was maintained by anonymizing identifiers. Audio files and datasets were password-protected and accessible only to the research team.

4. Results

4.1 Household and Environmental Determinants

Semi-permanent housing predominated across the four sub-counties, with inadequate ventilation observed in over half of households. Domestic animals were commonly present within compounds, increasing exposure to zoonotic and vector-borne risks. Although compound cleanliness was generally moderate, structural deficits—including earthen floors and limited airflow—create sustained environmental vulnerability.

One community leader noted:

"When the rains come, some houses flood and children start getting fever and cough almost immediately."

WASH conditions revealed partial progress but persistent gaps. Boreholes were the primary water source in many households; however, reliance on rivers and shallow wells remained notable. Functional handwashing stations were absent in most households, and soap availability was limited. Pit latrines were the dominant

sanitation facility, though a small proportion of households lacked any sanitation option. Improper waste disposal was frequently observed.
A civil society representative explained:

"People know handwashing is important, but without water nearby or soap, it becomes difficult to practice every day."

These findings reflect intermediary determinants that increase risk of diarrhoeal disease, helminth infections, and undernutrition—major contributors to maternal and child morbidity in LMIC contexts (UNICEF & WHO, 2023; Victora et al., 2021) [1,2].

4.2 Socioeconomic Vulnerability and Financial Barriers

Sub-county disparities were marked. While Nambale demonstrated relatively lower poverty levels, Teso South, Teso Central, and Butula exhibited substantially higher poverty burdens. Livelihoods were largely dependent on subsistence agriculture and informal trade, generating unstable income streams.

Although many households were within walking distance of a health facility, financial constraints significantly limited effective utilisation of services. Key Informants consistently cited out-of-pocket expenditures for laboratory tests, drugs during stock-outs, and transport.

A county health officer stated:
"The facility may be near, but if drugs are out of stock or tests are not covered, families are forced to pay. For many, that is the real barrier."

Teenage mothers lacking national identity cards faced additional exclusion from services. A sub-county administrator observed:
"Without an ID, some young mothers struggle to register or access certain services. That delay can be critical."

These findings illustrate how structural economic determinants undermine service utilisation despite nominal geographic access, consistent with equity concerns identified in Kenya's devolved system [3,4].

4.3 Education and Health Literacy

Educational attainment in Busia County remains below national averages, with disparities across sub-counties. Areas with stronger educational infrastructure demonstrated comparatively higher uptake of preventive health behaviours.

A community health promoter (CHP) explained:
"Where mothers have gone further in school, they ask more questions and follow instructions better."

In contrast, in lower-literacy areas, health messages were sometimes misunderstood or inconsistently applied. This highlights education as a mediating determinant influencing both health behaviour and system navigation capacity.

4.4 Health Behavior Indicators

Mosquito net use was widely reported, reflecting successful malaria prevention efforts. However, structured handwashing practices and consistent ANC attendance were variable.

One nurse reported:
"Many mothers start ANC late, sometimes in the second or third trimester. Often, they say they were waiting to get money or permission."

A small proportion of children exhibited visible signs of ill health during household visits, reinforcing the interaction between environmental exposures and delayed care-seeking.

4.5 Community and Governance Context

Community health promoters were widely present and trusted. Schools, churches, and community meeting spaces provided important health communication platforms. However,
CHPs reported workload and resource constraints limiting household coverage.
As one CHP noted:

"We are trusted, but we cover too many (100) households. It is not possible to follow up everyone regularly."

Governance challenges were also cited. In some wards, stalled health infrastructure projects and uneven distribution of facilities contributed to service gaps.
A local stakeholder remarked:

"Some dispensaries have been started but not completed for years. That affects access, especially for women."

These qualitative insights triangulate with quantitative observations and underscore the structural nature of MCH inequities.

5. Discussion

This study demonstrates that maternal and child health outcomes in Busia County are shaped by interconnected structural and intermediary social determinants, rather than isolated behavioural factors.

5.1 Structural Inequities in a Devolved System

Socioeconomic disparities across sub-counties reflect a social gradient in exposure to risk. High-poverty areas experience cumulative disadvantage: semi-permanent housing, WASH gaps, limited financial protection, and weaker educational systems.
As one county official reflected:

"Devolution gave counties responsibility, but resources and capacity do not always match the needs on the ground."

This observation aligns with analyses of decentralised health systems in Kenya, where uneven implementation capacity can reproduce inequities [2,5].

5.2 Environmental Determinants and Preventable Morbidity

Environmental exposures remain significant drivers of preventable morbidity. While vertical interventions such as mosquito net distribution have achieved high uptake, broader environmental risks—poor ventilation, inadequate waste disposal, limited hygiene infrastructure—persist.
A civil society leader summarised:

"We fight malaria strongly, but diarrhoea and worms keep coming back because sanitation is still weak."
This illustrates the limitation of disease-specific programming without addressing underlying environmental determinants.

5.3 Education as a Mediating Determinant

Education and health literacy emerged as critical mediators of maternal and child health outcomes. Higher educational attainment was associated with improved health-seeking behaviour and preventive practice adherence.

This finding reinforces global evidence that maternal education substantially improves child survival and health outcomes and suggests that nursing practice must integrate health literacy strengthening into routine care [6].

5.4 Implications for Nursing Practice

The findings support expanding the nursing role beyond clinical service provision toward structured assessment of social determinants during ANC and PNC encounters.
When a nurse hears, for example,

"The clinic is near, but without money it feels far,"
this signals the need for SDOH screening, referral to social protection mechanisms, and community follow-up.

Nurse-led outreach—working collaboratively with CHPs—can bridge the gap between household vulnerability and facility-based care, consistent with WHO (2021) and ICN (2023) recommendations [7,8].

5.5 Health Systems Strengthening for LMIC Contexts

For LMIC health systems, improving maternal and child health requires:
• Institutionalised SDOH screening within primary health care frameworks (WHO, 2022) [9].
• Stronger governance accountability mechanisms in decentralised systems.
• Formal integration of civil society actors into planning and monitoring processes.
• Cross-sector collaboration addressing WASH, education, and poverty reduction.
• Without addressing structural inequities, clinical service expansion will produce uneven gains.

5.5.1 Policy Implications for Busia County

For Busia County specifically, findings suggest:
• Integrating SDOH indicators into County Integrated Development Plans.
• Targeted equity-based allocation toward high-poverty sub-counties.
• Strengthened supervision and logistical support for CHPs.
• Formalised collaboration between nurses, CHPs, and civil society organizations.

6. Conclusion

This study demonstrates that maternal and child health (MCH) outcomes in Busia County are shaped less by clinical service availability alone and more by the broader social and environmental conditions in which women and children live. Across Teso South, Butula, Nambale, and Teso Central sub-counties, household-level deficits in housing quality, water and sanitation infrastructure, environmental hygiene, income security, and transport access were consistently linked to barriers in care-seeking, continuity of antenatal services, child immunization uptake, and preventive health practices.

The findings underscore three central conclusions.
First, structural determinants remain foundational drivers of inequity. Inadequate WASH facilities, long distances to improved water sources, unsafe waste disposal, and poor housing conditions increase exposure to infection, heighten caregiving burdens, and reduce the time and financial flexibility required for timely health service utilization. These environmental constraints interact with poverty and informal livelihoods to compound vulnerability among women of reproductive age and young children.

Second, health system access is mediated by social and economic realities. While health facilities are geographically distributed across the county, effective access is constrained by transport costs, seasonal mobility, cross-border dynamics, and household income instability. Insurance enrolment alone does not eliminate access barriers when indirect costs remain high. This indicates that UHC-oriented reforms must address both financial and non-financial barriers to achieve equitable maternal and child health outcomes.

Third, intersectoral coordination remains insufficiently institutionalized. Key informants highlighted fragmentation between health, water, sanitation, housing, and social protection sectors. Although community health promoters serve as critical connectors between households and facilities, their effectiveness is limited when upstream determinants—such as water infrastructure and environmental sanitation—are not simultaneously addressed. Strengthening governance mechanisms for cross-sector collaboration at county and sub-county levels is therefore essential.

Taken together, the study affirms that improving maternal and child health in Busia County requires a shift from predominantly service-delivery–focused interventions toward integrated, social-determinants–responsive strategies. Priority actions include scaling up improved WASH infrastructure, strengthening community-based preventive services, expanding transport-sensitive referral systems, enhancing social protection for vulnerable households, and formalizing interdepartmental coordination mechanisms within county governance structures.

For nursing practice and public health leadership, the findings reinforce the need to integrate social risk screening, community engagement, and environmental health surveillance into routine maternal and child health programming. Health professionals must be equipped not only as service providers but also as advocates and coordinators addressing upstream determinants.

In conclusion, maternal and child health inequities in Busia County are not solely a function of health service gaps; they reflect persistent social and environmental vulnerabilities. Sustainable improvements will depend on multisectoral investment, strengthened local governance, and community-cantered health systems that address both the clinical and structural dimensions of health [10-16].

References

1. Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet, 397*(10282), 1388-1399.
2. World Health Organization (WHO), & United Nations Children's Fund (UNICEF). (2023). *Progress on household drinking water, sanitation and hygiene 2000–2022: Special focus on gender.* WHO & UNICEF Joint Monitoring Programme.
3. Barasa, E., Tsofa, B., Molyneux, S., & English, M. (2021). Devolution and the evolution of health systems governance in Kenya. *BMJ Global Health, 6*(6), e005737.
4. World Bank. (2022). *Improving health service delivery in Kenya's devolved system.* World Bank Group.
5. Tsofa, B., Goodman, C., Gilson, L., & Molyneux, S. (2017). Devolution and its effects on health workforce and commodities management–early implementation experiences in Kilifi County, Kenya. *International journal for equity in health, 16*(1), 169.
6. World Health Organization. (2021). *Global strategic directions for nursing and midwifery 2021*-2025. World Health Organization.
7. International Council of *Nurses (ICN). (2023). Nurses: A voice to lead—Our nurses. Our future.* ICN.
8. World Health Organization. (2022). Primary health care measurement framework and indicators: monitoring health systems through a primary health care lens. Web annex: technical specifications.
9. Black, R. E., Walker, N., Laxminarayan, R., & Temmerman, M. (2023). Reproductive, maternal, newborn, and child health in low-income and middle-income countries: Progress and challenges. *The Lancet, 402*(10396), 219–232.
10. Ministry of Health. (2020). Kenya Community Health Strategy 2020–2025. *Kenya Community Heal Strateg, 2020,* 1-63.
11. Perry, H. B., Zulliger, R., & Rogers, M. M. (2014). Community health workers in low-, middle-, and high-income countries: an overview of their history, recent evolution, and current effectiveness. *Annual review of public health, 35,* 399-421.
12. Republic of Kenya. (2023). *Social Health Insurance Act, 2023.* Government Printer.
13. Times, U. (2021). Unsettled Lives: Shaping our Future in a Transforming World. *Human development report, 2022.*
14. World Health Organization. (2023). Trends in maternal mortality 2000 to 2020: *estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division.* World Health Organization.
15. World Health Organization. (2023). *Integrating the social determinants of health into health workforce education and training.* World Health Organization.
16. World Health Organization (WHO). (2024). *Social determinants of health and health equity: Evidence brief.* WHO.