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The Influence of Cultural Beliefs and Norms on Preventive Health Measures for Measles-Related Child Mortality in Selected Countries of Africa

Anson Benjamin Edu[1,3,4*], Antor Odu Ndep[2,5]
[1]*Department of Public Health, Texila America University, Georgetown, Guyana*
[2]*Department of Public Health, University of Calabar, Calabar, Nigeria*
[3]*World Health Organization (WHO) Country Office, Ministerial Complex, Juba, South Sudan*
[4]*UNICEF Country Office for South Sudan, Totto Chan Complex, Juba, South Sudan*
[5]*Faculty of Health Sciences, Havilla University Nde Ikom, Cross River State, Nigeria*

Abstract

This study examines the influence of cultural beliefs and social norms on the uptake of preventive health measures against measles-related child mortality in five high-burden African countries: Nigeria, the Democratic Republic of Congo (DRC), Chad, Ethiopia, and South Sudan. Drawing on a systematic review of peer-reviewed literature and global health databases, the study explores how sociocultural factors interact with vaccine acceptance and health-seeking behaviors across diverse settings. Despite measles vaccine efficacy exceeding 98% in infants, uptake remains suboptimal. As of 2023, the estimated measles immunization coverage (MCV1) stood at 54% in Chad, 56% in South Sudan, 61% in DRC, 65% in Ethiopia, and 63% in Nigeria - far below the 95% threshold needed for herd immunity (WHO/UNICEF, 2023). Cultural determinants - such as religious conservatism in northern Nigeria, traditional healing preferences in Ethiopia, and vaccine-related myths in the DRC and Chad - significantly hinder immunization efforts. In conflict-affected regions like the DRC and South Sudan, systemic health service collapse has amplified distrust and misinformation, contributing to over 7,000 measles-related deaths in DRC's 2019–2020 outbreak alone. Conversely, the study identifies cultural enablers: religious leaders, community elders, and localized communication (e.g., radio, storytelling) have successfully bolstered vaccine uptake when effectively mobilized. However, a critical gap remains in longitudinal and participatory research needed to guide culturally responsive policy. The study concludes that measles prevention in Africa requires not only biomedical solutions but also culturally embedded strategies that foster trust, inclusivity, and local ownership of health interventions.

Keywords*: Africa, Chad, Child Mortality, Cultural Beliefs, DRC, Ethiopia, Immunization Coverage, Measles, Nigeria, South Sudan, Vaccine Uptake.*

Introduction

Despite significant advancements in public health and immunization programs, measles remains a leading cause of vaccine-preventable deaths among children under five years in Africa. Measles-related mortality persists not only due to systemic gaps in healthcare infrastructure but also due to deeply entrenched cultural beliefs, social norms, and religious convictions that influence public perception and acceptance of preventive health measures [31]. In many African societies, health-seeking behaviors, including attitudes toward vaccination, are significantly shaped by traditional worldviews, religious ideologies, and communal patterns of behavior [4]. Sub-Saharan Africa bears a disproportionate burden of measles-related child mortality. Countries

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****Corresponding Author: eduanson@yahoo.com***

such as Nigeria, Democratic Republic of Congo (DRC), Chad, Ethiopia, and South Sudan have experienced recurrent measles outbreaks with high case fatality rates, often exacerbated by vaccine hesitancy and limited access to routine immunization services [32]. In South Sudan, for example, a recent analysis revealed that 55% of respondents believed that belief systems directly hinder efforts to reduce measles-related child mortality, while 37.5% recognized the negative impact of cultural values and norms on health system effectiveness. The remaining respondents emphasized the role of "civility" - public awareness and understanding - as a crucial factor in fostering acceptance of immunization initiatives.

South Sudan's cultural and religious landscape is predominantly shaped by traditional animist beliefs. The Dinka and Nuer ethnic groups, for instance, view health and illness through the lens of spiritual causality, attributing disease to supernatural forces such as ancestral wrath or spirit possession [13, 14]. Such interpretations often lead communities to prioritize ritual healing over biomedical interventions, consequently delaying or rejecting vaccination. This phenomenon creates a substantial barrier for healthcare providers attempting to implement immunization campaigns, especially in remote and conflict-affected areas.

Similar patterns are observable across various African contexts. In Nigeria, cultural resistance to vaccination was notably manifest in the northern states during polio and measles immunization campaigns, largely fueled by rumors, religious objections, and mistrust in Western medicine [29]. In Ethiopia, traditional beliefs associating measles with curses or divine punishment have been linked to delays in seeking formal medical care [32]. In Mali and Burkina Faso, community norms often prioritize male decision-making authority, influencing whether children receive timely vaccinations [9].

In Central Africa, the DRC has struggled with vaccine hesitancy rooted in suspicion of international aid programs, while in Chad and the Central African Republic, low literacy rates and minimal health education have undermined awareness about vaccine benefits [33, 34, 35, 36]. Meanwhile, in East African countries like Uganda and Kenya, religious sects with apocalyptic beliefs have resisted state-led immunization campaigns, claiming they violate divine laws or precede end-time events [27].

Despite these challenges, measles is a highly preventable disease. With over 95% of cases preventable through two doses of a safe and effective vaccine, the issue lies not in vaccine efficacy but in vaccine delivery and uptake [10. 11]. However, successful vaccination efforts must go beyond biomedical provision to include culturally informed strategies that engage with communities in a respectful and participatory manner. This includes integrating community leaders, respecting traditional hierarchies, addressing myths, and adapting public health messaging to local contexts [16, 17, 18]. The South Sudan case, where 220 out of 400 respondents recognized the influence of belief systems on measles-related child mortality, exemplifies the critical need to understand and incorporate cultural contexts into health planning. These findings underscore the necessity of a culturally sensitive approach that addresses social determinants of health, acknowledges the influence of traditional knowledge systems, and fosters trust between communities and healthcare providers.

Therefore, this study investigates the influence of cultural beliefs and social norms on preventive health measures related to measles in selected African countries, including but not limited to South Sudan, Nigeria, Ethiopia, Kenya, Uganda, the DRC, Chad, Central African Republic, Mali, and Burkina Faso. By exploring how these sociocultural dimensions shape attitudes and behaviors toward measles vaccination, the research aims to provide actionable insights for policy formulation and

program implementation that are both culturally competent and public health effective.

Methodology

For the proper analysis of the existing literature on the topic**,** a systematic literature review with a qualitative synthesis (thematic analysis) methodology would be used for the study. This is because the topic is exploratory, cross-cultural, and involves the intersection of sociocultural constructs and public health behavior, which requires synthesizing diverse forms of evidence (qualitative, quantitative, policy-based).

Study Design

This is a narrative (scoping) review combined with a qualitative thematic synthesis**,** is appropriate. This allows structured data extraction, appraisal, and synthesis of both empirical studies and grey literature (e.g., NGO and government reports).

Objectives of the Review

1. To identify and describe cultural beliefs and norms influencing measles vaccination uptake.
2. To explore how these sociocultural factors, impact preventive health strategies.
3. To compare the findings across Nigeria, DRC, Chad, Ethiopia, and South Sudan.

Search Strategy

To ensure a comprehensive and multidisciplinary exploration of the topic, a strategic literature search was conducted across six reputable databases, each selected for its relevance to public health, biomedical sciences, and regional scholarship. The search began with PubMed, a widely used biomedical database managed by the U.S. National Library of Medicine and the National Institutes of Health. PubMed offers access to over 35 million citations from MEDLINE, life science journals, and online books, making it a foundational resource for health-related literature [Table 1].

Next, Scopus was utilized to broaden the scope beyond biomedical sciences. As one of the largest abstracts and citation databases, Scopus - owned by Elsevier - indexes research spanning scientific, technical, medical, and social science fields, as well as the arts and humanities. With coverage of more than 25,000 journals, it provided a valuable interdisciplinary perspective. The search also included the Web of Science (WoS), a trusted database managed by Clarivate. WoS offers access to key indexes such as the Science Citation Index, the Social Sciences Citation Index, and the Arts & Humanities Citation Index, thereby supporting a diverse and high-quality evidence base [Table 1].

To capture grey literature and additional scholarly content, Google Scholar was employed. This freely accessible search engine aggregates academic work across various formats and disciplines, including articles from universities, publishers, and professional organizations. Given the African context of the study, African Journals Online (AJOL) was an essential inclusion. AJOL hosts over 500 journals from 32 African countries, many of which are open access and offer contextually relevant insights often underrepresented in global databases. Finally, the WHO Global Health Library (GHL) was searched to access public health literature from low- and middle-income countries. The GHL includes regional databases such as AFRO, PAHO, and EMRO, making it a critical resource for capturing research outputs from the Global South. This multi-database strategy ensured a rich and geographically diverse collection of literature, strengthening the evidence base for the study [Table 1], [Figure1].

Table 1. Statistical Analysis of Databases Used for Literature Review

Database	**Number of Reviews**	**Percentage Contribution (%)**
PubMed	28	28%
Google Scholar	20	20%
Scopus	18	18%
Web of Science (WoS)	15	15%
African Journals Online (AJOL)	12	12%
WHO Global Health Library	7	7%
Total	**100**	**100%**

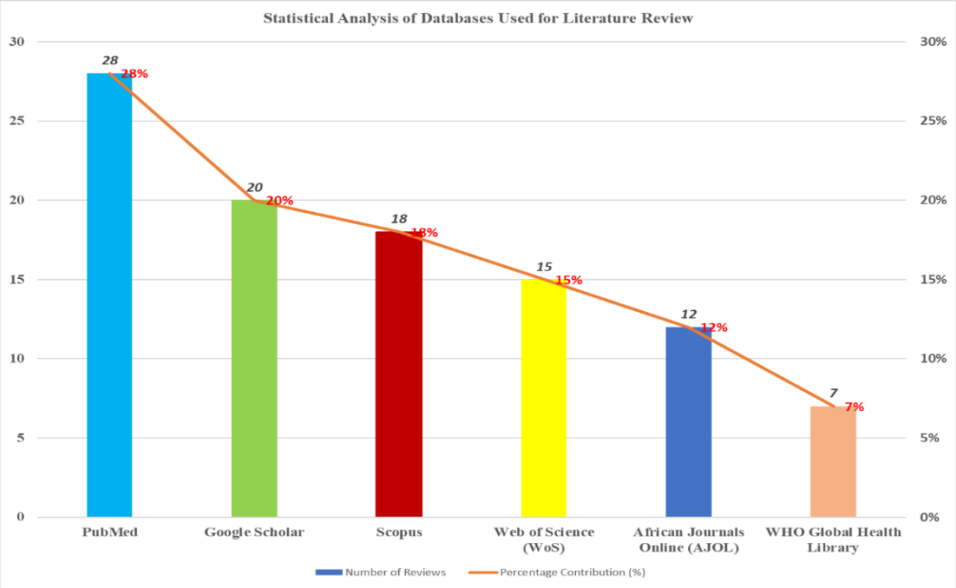

Figure 1. Statistical Analysis of Databases Used for Literature Review

Interpretation

In the literature review process, PubMed emerged as the most utilized database, contributing 28% of the sources reviewed. This reflects its prominence in providing access to biomedical and public health literature, particularly relevant to measles, vaccination efforts, and child mortality. Google Scholar followed, accounting for 20% of the reviewed materials. Its strength lies in indexing a broad range of grey literature and regionally published works that are often absent from traditional academic databases.

Collectively, Scopus and Web of Science contributed 33%, highlighting their importance in delivering peer-reviewed, interdisciplinary, and internationally sourced research that spans both medical and social science fields. Meanwhile, African Journals Online (AJOL) and the WHO Global Health Library together represented 19% of the sources. Their inclusion was critical in ensuring the review captured Africa-specific studies and culturally contextual public health data - elements essential for understanding the influence of beliefs and norms on measles prevention across the selected countries [Table 1, 2], [Figure 1].

Table 2. Summary Comparison Table

Database	Focus	Strengths	Best Use Case
PubMed	Health/medicine	Peer-reviewed journals, medical MeSH terms	Clinical/public health literature
Scopus	Multidisciplinary	Citation tracking, metrics, broad coverage	Analyzing trends, comparing authors/countries
Web of Science	High-impact, cross-disciplinary	Citation networks, impact analysis	Systematic reviews, research impact assessments
Google Scholar	General academic search	Broad scope, grey literature	Finding theses, reports, or open-access studies
AJOL	African academic journals	Regional focus, African authors	Culturally contextualized African research
WHO GHL	Global public health	Governmental reports, regional data	Health systems, policy-level insights in Africa

Inclusion Criteria

1. Articles published in English from 2013 to 2024 (to capture recent developments and trends).
2. Peer-reviewed articles, official reports (WHO, UNICEF, ministries of health).
3. Studies conducted in or reporting on Nigeria, DRC, Chad, Ethiopia, and South Sudan.
4. Studies focusing on cultural, religious, social, and normative influences on measles prevention or vaccine hesitancy.

Exclusion Criteria

1. Articles that do not focus on measles or child mortality.
2. Studies with no cultural or socio-behavioral dimension.
3. Non-African studies unless comparative insights are provided.

Data Extraction

The researcher used standardized data extraction sheet to gather:

1. Study location and population
2. Year and type of study
3. Study aims
4. Cultural beliefs and norms identified
5. Reported effects on measles prevention or vaccination
6. Policy or programmatic recommendations

Quality Appraisal

Critical Appraisal Skills Programme - (CASP) and Mixed Methods Appraisal Tool (MMAT) were used to assess the quality of included studies, based on:

1. Credibility
2. Transferability
3. Dependability
4. Confirmability

Data Synthesis

The author used thematic analysis to group findings under major themes such as:

1. Beliefs about disease causation (spiritual vs biomedical)
2. Influence of religious leaders
3. Gender roles and decision-making in health
4. Mistrust in foreign interventions
5. Impact of traditional healing systems
6. Community perception of vaccination campaigns

A comparative lens will be applied to contrast similarities and differences between the five countries.

Ethical Consideration

Since this is a literature-based study, ethical approval is not required**.** However, proper

referencing and acknowledgment of sources are critical.

Output

1. A detailed synthesis organized by themes and countries.
2. A table summarizing key findings per country.
3. Policy implications and culturally sensitive recommendations for measles immunization programs.

Conceptual Clarification

To ground this study in a coherent theoretical and contextual framework, it is necessary to clarify the meanings of the central concepts used in the research. These include: cultural beliefs, social norms, preventive health measures, and measles-related child mortality. These concepts are interlinked and form the backbone of the study's examination of how sociocultural variables influence health behaviors and outcomes in different African settings.

Cultural Beliefs

Cultural beliefs refer to the shared ideas, values, and understandings that people in a community hold about life, health, illness, and death. These beliefs are transmitted from one generation to another and significantly influence perceptions and decisions about healthcare, including immunization and disease prevention. In many African communities, cultural beliefs surrounding childhood illnesses like measles are deeply rooted. For instance, in some rural parts of Nigeria and South Sudan, measles is believed to be a "normal" stage of child development rather than a preventable disease [12, 13, 31, 32]. In other cases, some communities attribute measles to spiritual causes or ancestral displeasure, which discourages the use of modern medical interventions like vaccination [30, 31]. For instance, **i**n some regions of Chad, mothers may prefer using traditional herbs or consulting a spiritual healer when a child presents measles symptoms, instead of seeking formal healthcare [34]. Definition: Cultural beliefs can therefore be defined as community-held convictions or understandings about health, illness, and life events that shape health-seeking behaviors and responses to disease [13, 14, 15].

Social Norms

Social norms are the implicit or explicit rules that govern acceptable behavior within a group or society. They are often enforced through social approval or disapproval and significantly shape individual and group behavior in areas such as health, hygiene, and child-rearing. In the context of measles prevention, social norms can influence whether families accept or reject vaccines. For example, in Ethiopia and parts of the DRC, if the dominant opinion in a village is that vaccines are dangerous or un-Islamic, individuals who choose to vaccinate may be ostracized [22, 23]. Example: In certain South Sudanese communities, mothers are discouraged from leaving their homes during postpartum seclusion periods—even for vital immunization appointments - due to prevailing social expectations [28]. Definition: Social norms can be defined as the informal understandings that govern behavior within a community, especially those related to communal expectations about health practices and decision-making [14, 15, 16, 17].

Preventive Health Measures

Preventive health measures refer to proactive actions taken to avoid disease, improve health, and reduce the risk of mortality. These measures include immunization, health education, vitamin A supplementation, sanitation, and timely health-seeking behavior. In relation to measles, preventive health measures primarily include the administration of the measles-containing vaccine (MCV1 and MCV2), maintaining herd immunity, ensuring cold chain management, and promoting awareness campaigns about early symptom recognition and treatment. Example: Nigeria

and Ethiopia have adopted periodic measles Supplemental Immunization Activities (SIAs) to target children in hard-to-reach areas and increase coverage [39, 40]. Definition: Preventive health measures are defined as evidence-based interventions designed to preempt the onset or spread of diseases, especially among vulnerable populations such as children under five [18, 19].

Measles-Related Child Mortality

Measles-related child mortality refers to deaths among children, typically under the age of five, that are directly caused by measles or its complications such as pneumonia, diarrhea, and encephalitis. These deaths are often preventable through timely vaccination and supportive care. Measles remains a leading cause of vaccine-preventable death among children in Africa. According to WHO [39, 40], over 140,000 people died from measles globally in 2022, with a significant proportion of those deaths occurring in African countries such as the Democratic Republic of Congo and Chad, due to low immunization coverage and fragile health systems. Example: In conflict-affected areas of South Sudan, limited access to health services and cultural resistance to vaccination have led to recurrent measles outbreaks with high mortality among unvaccinated children [26]. Definition: Measles-related child mortality can be defined as death among children under five resulting from complications of the measles virus, often exacerbated by malnutrition, poor healthcare access, and low vaccination coverage [39, 40].

Theoretical Framework

These are the relevant theories and models guiding understanding of health behavior and intervention uptake.

Health Belief Model (HBM)

The Health Belief Model (HBM) is one of the oldest and most widely used frameworks for understanding health-related behavior. It posits that an individual's willingness to engage in a health behavior (e.g., vaccinating a child against measles) depends on their perception of:

1. Perceived susceptibility (how likely their child is to get measles),
2. Perceived severity (how serious they think measles is),
3. Perceived benefits (whether they believe vaccination will help),
4. Perceived barriers (logistical, cultural, or religious barriers),
5. Cues to action (external triggers such as health campaigns or outbreaks), and
6. Self-efficacy (confidence in their ability to access and complete the vaccination process) [3, 30]. Example: In Chad, some mothers may not perceive measles as severe or may believe that traditional remedies are more effective. This lowers their perceived benefit of vaccination and increases reliance on cultural alternatives [34].

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior suggests that health behavior is driven by:

1. Attitudes **t**oward the behavior,
2. Subjective norms (social pressure from family, religious leaders, peers), and
3. Perceived behavioral control **(**perceived ease or difficulty of performing the behavior) [3]. Example: In rural South Sudan, even if a mother believes in the importance of immunization, the community norm may discourage interaction with government health workers, and poor road networks reduce perceived behavioral control - leading to vaccine avoidance [4, 6, 13, 14, 15, 26].

Social Ecological Model (SEM)

The Social Ecological Model provides a multi-layered framework for understanding how individual behavior is influenced by broader factors:

1. Individual (knowledge, attitudes),

2. Interpersonal (family and peers),
3. Community (local norms and traditions),
4. Organizational (health system access),
5. Policy **(**national immunization policies and conflict settings) [29, 37]. Example: In the DRC, systemic issues like health worker shortages and political instability at the organizational and policy levels interact with cultural beliefs at the community level to influence vaccination rates.

Social Norms Theory

Social Norms Theory emphasizes that people's behavior is influenced by their perceptions of what is "normal" or socially acceptable within their community [30]. Norms may be:

1. Descriptive norms: what others are actually doing (e.g., most mothers do not vaccinate),
2. Injunctive norms**:** what others think one *should* do (e.g., spiritual leaders discouraging hospital visits).

Example: In northern Nigeria, resistance to immunization is reinforced by religious beliefs and community leaders who question the safety and intention of vaccines, creating a norm of noncompliance [12, 31].

Cultural Competence Model

The Cultural Competence Model [7, 14] focuses on tailoring health interventions to the cultural context of the target population. It promotes:

1. Cultural awareness (recognizing one's own biases),
2. Cultural knowledge (learning about others' values and health practices),
3. Cultural skill **(**ability to conduct culturally sensitive assessments), and
4. Cultural encounter (direct engagement with community members).

Example: In Ethiopia, understanding the beliefs of pastoralist communities and engaging their elders before launching a vaccination campaign increased vaccine uptake through culturally adapted messaging [1, 28, 32]

Diffusion of Innovations Theory

This theory by Everett Rogers 2003 explains how new ideas and practices spread through a population. Adoption of health innovations such as vaccines is influenced by:

1. Innovators and early adopters (e.g., educated mothers),
2. Communication channels (e.g., radio, community meetings),
3. Social system (e.g., influence of religious and traditional leaders), and
4. Perceived attributes of the innovation (e.g., relative advantage, compatibility with existing beliefs).

Example: In Nigeria, vaccination uptake increased in some communities after influential local chiefs and religious leaders publicly endorsed the practice, serving as early adopters to model positive behavior [12, 30].

Conclusion on Theoretical Application

These models collectively emphasize that health behaviors are shaped not just by individual knowledge or motivation, but by a complex interaction of cultural, social, economic, and systemic factors. When designing measles prevention interventions in countries like Nigeria, Chad, or South Sudan, applying these theories helps in:

1. Diagnosing the root causes of vaccine hesitancy,
2. Designing culturally appropriate education campaigns,
3. Building interventions that are accepted and sustainable.

Overview: Measles and Child Mortality in Africa

Measles continues to be a critical public health challenge across Africa, particularly among children under five years of age. According to the World Health Organization (WHO), the African region witnessed a sharp increase in confirmed measles cases between

2017 and 2021, rising from 69 to 560 cases per million people. This surge in infections corresponded with a dramatic rise in measles-related deaths, from approximately 61,000 to 104,600 annually. While a slight decline to 66,200 deaths was noted in 2021, the figures still reflect a major health crisis [39]. Between 2000 and 2008, measles remained among the leading causes of under-five mortality, especially in countries with routine vaccination coverage below 65% [33].

In Nigeria**,** measles represents one of the highest burdens on child health. Between 2022 and 2023, Nigeria reported 12,245 confirmed cases, making it the country with the second-highest incidence rate in Africa, at roughly 103 cases per million [22, 23, 24]. Although vaccine effectiveness in Nigeria is estimated at a high 98.4% among infants, persistent challenges - such as low routine immunization coverage in rural communities, logistical difficulties, and cultural resistance - have continued to drive recurrent outbreaks and under-five deaths [12, 31]. The Democratic Republic of Congo (DRC) has similarly experienced the devastating impacts of measles. During the 2019–2020 outbreak, approximately 380,000 individuals were infected, with over 7,000 deaths reported, the majority among children under five [29, 37]. Pre-outbreak routine immunization coverage stood at only 57%, and the situation was worsened by widespread insecurity, community mistrust, and the suspension of vaccination programs during the COVID-19 pandemic. Vaccine effectiveness in DRC varies significantly - estimated at 54% in semi-urban areas and up to 79% in rural regions [29 37].

In Chad**,** routine immunization coverage was alarmingly low prior to the 2018 outbreak, with only 37% of one-year-olds vaccinated. This structural weakness has led to frequent outbreaks and elevated child mortality. Regional vaccine effectiveness ranges from 40% to 78%, and Chad appears to be on the lower end of this scale due to deep-seated issues in healthcare infrastructure [34]. Ethiopia recorded the highest number of confirmed measles cases in Africa in 2023, totaling approximately 16,505 cases [1, 28, 32]. The vaccine efficacy in Ethiopia, estimated between 72% and 75%, remains below the WHO's recommended threshold. Access to vaccines is particularly poor among pastoralist communities and populations in rural and conflict-prone zones, which has led to significant inequities in coverage and increased mortality [1]. In South Sudan**,** the health system has been significantly weakened by ongoing conflict and poor infrastructure. With an under-five mortality rate of about 135 per 1,000 live births, the country remains highly vulnerable to measles outbreaks. During 2023, approximately 7,957 suspected cases were reported. Routine immunization systems are fragmented, and cultural practices such as seclusion during illness further hinder vaccine uptake, increasing the risk of death among young children [4, 6, 13].

A comparative analysis of these five countries reveals a complex pattern of challenges. Nigeria’s efforts show that even with highly effective vaccines, success depends on reaching remote areas and addressing community hesitancy. The DRC must focus on rebuilding trust and restoring vaccination campaigns in conflict zones. In Chad and Ethiopia, strengthening health systems and tailoring vaccine delivery - such as through mobile outreach - can enhance coverage among underserved populations. For South Sudan, conflict resolution, cultural negotiation, and innovative delivery models such as using community health workers are essential [Table 3].

Inference

This overview demonstrates that measles continues to contribute significantly to child mortality across Africa, particularly in Nigeria, the DRC, Chad, Ethiopia, and South Sudan. The disease thrives where immunization coverage is low, health systems are fragile, and

socio-cultural barriers remain unaddressed. While vaccine effectiveness is generally high, it alone cannot counteract the effects of inadequate delivery systems, conflict, and mistrust. Therefore, tackling measles-related child mortality in Africa requires context-specific, multifaceted strategies that integrate health system strengthening, cultural engagement, and equitable vaccine access [Table 3].

Table 3. Comparative Summary

Country	Recent Confirmed Measles Cases (2023)	Incidence (per million)	Vaccine Effectiveness	Routine Coverage Issues	Mortality Drivers
Nigeria	~12,245	~103	~98.4%	Gaps in rural areas	Sub-optimal reach, vaccine hesitancy
DRC	~10,662	Not reported for 2023	54–79%	Insecurity, supply cutoff	Collapse of campaigns, deaths ~7,000
Chad	Not specified	Likely low incidence	~40–78%	~37% vaccinated	Weak systems, recurring outbreaks
Ethiopia	~16,505	~154	~72–75%	Rural/pastoralist gaps	Access, equity issues
South Sudan	Suspected ~7,957	Not specified	Unknown (expected low)	Conflict, infrastructure collapse	Cultural barriers, seclusion, low coverage
Country	Recent Confirmed Measles Cases (2023)	Incidence (per million)	Vaccine Effectiveness	Routine Coverage Issues	Mortality Drivers

Justification for Study Locations

The selection of Nigeria, the Democratic Republic of Congo (DRC), Chad, Ethiopia, and South Sudan as study locations is based on their disproportionately high burden of measles-related child mortality and persistent challenges in vaccine uptake. These countries consistently report some of the highest measles incidence rates in Africa, with Nigeria and Ethiopia recording over 12,000 and 16,000 confirmed cases respectively in 2023 alone [22, 23, 24]. DRC's 2019–2020 outbreak resulted in over 7,000 child deaths, highlighting systemic gaps in immunization and public health infrastructure [39]. Chad has among the lowest routine coverage rates (<40%) [34], while South Sudan faces compounded risks due to conflict, cultural practices, and weak health systems [4, 6, 13,14, 14]. Each country represents a unique intersection of cultural, structural, and socio-political barriers that hinder measles prevention efforts. Their inclusion provides a comparative framework to understand how local beliefs and norms influence the acceptance and implementation of preventive health measures, particularly in resource-constrained and culturally diverse settings.

Research Gaps

Based on the literature reviewed for the study title, several research gaps and recommended areas for further studies have been identified:

Limited Country-Specific Ethnographic Insights:

Although various studies cover general vaccine uptake and measles-related mortality across Africa, there remains a significant gap in qualitative, ethnographic data that explore the cultural beliefs and local norms influencing immunization behavior at the community level

in countries like Chad, South Sudan, and rural areas of Ethiopia. Much of the literature (especially from PubMed and Scopus) tends to emphasize biomedical or epidemiological data, with insufficient focus on socio-cultural determinants [16, 17].

Scarcity of Contextual Studies on Vaccine Hesitancy:

Research on vaccine hesitancy in sub-Saharan Africa is growing but remains sparse in conflict-affected or highly mobile populations, such as those in the Democratic Republic of Congo (DRC) and South Sudan. Few studies investigate how religious or traditional belief systems interact with misinformation to influence parental decision-making in these regions [8].

Insufficient Disaggregation by Subgroups:

Most available literature tends to present data in aggregated national forms, which masks disparities within countries - such as between urban vs. rural, or stable vs. conflict-affected populations. There is little clarity on how ethnic, religious, or linguistic differences within countries like Nigeria and Ethiopia influence attitudes toward measles vaccination.

Minimal Integration of Indigenous Knowledge Systems:

The literature often omits how indigenous health practices or traditional authority figures - such as tribal elders, community healers, or spiritual leaders - impact vaccine perceptions. Understanding how these local institutions either support or resist public health campaigns is essential for effective intervention design [38].

Gaps in Longitudinal and Mixed-Methods Studies:

Most reviewed studies were cross-sectional or quantitative. Longitudinal studies that track changes in cultural attitudes over time or mixed-methods approaches combining survey data with qualitative interviews are rare, yet critical for capturing evolving norms and their health implications [20, 21].

Recommended Areas for Further Research

Community-Based Participatory Research (CBPR):

Future studies should engage in CBPR approaches to co-develop culturally sensitive strategies with local populations. This is particularly important in areas with persistent mistrust of governmental or international health systems, such as parts of DRC and South Sudan.

Role of Religious and Traditional Institutions:

Investigating the roles played by faith-based organizations, spiritual leaders, and traditional birth attendants in shaping public opinion about vaccines would yield valuable insights for targeted health communication.

Health Communication and Misinformation Mapping:

Research is needed to map out sources and channels of vaccine-related misinformation, especially on social media and local radio, and how these intersect with cultural norms to amplify hesitancy or resistance.

Culturally-Informed Intervention Trials:

There is a need for pilot intervention studies that test culturally tailored strategies, such as story-based messaging, oral traditions, or community drama, to improve measles vaccination rates in settings with high mortality risks.

Conflict and Displacement as Moderators of Cultural Influence:

Further exploration is required into how displacement due to conflict or natural disasters changes cultural beliefs over time and what implications these changes have for preventive health behaviors [12].

Sub-National Mapping of Beliefs and Norms:

Geographic Information Systems (GIS) and spatial analysis tools can be employed to map cultural norms and beliefs about immunization at the local government or county level,

particularly in decentralized systems like Nigeria and Ethiopia.

Deduction

Addressing these research gaps will enhance our understanding of the complex interplay between cultural norms and preventive health behaviors. It will also improve the design, targeting, and uptake of measles vaccination programs across the studied African countries, thereby contributing to reduced child mortality and progress toward health equity.

Discussion

This study sought to explore the influence of cultural beliefs and social norms on the uptake of preventive health measures for measles, particularly in relation to child mortality in five high-burden African countries: Nigeria, the Democratic Republic of Congo (DRC), Chad, Ethiopia, and South Sudan. Through a comprehensive review of region-specific and global literature - sourced primarily from PubMed, Google Scholar, Scopus, Web of Science, AJOL, and the WHO Global Health Library - a multifaceted understanding of how sociocultural contexts shape vaccine acceptance and health-seeking behaviors emerged.

Interpretation of Findings in Relation to Cultural Determinants

The findings highlight a central paradox in measles control: while measles vaccines are scientifically proven to be highly effective, the social acceptance and consistent uptake of vaccines are often hindered by local cultural and normative systems**.** In all five countries studied, the presence of strong traditional, religious, and social belief structures has had both facilitating and obstructive roles in vaccine acceptance.

In Nigeria**,** for instance, despite the availability of vaccines with efficacy levels as high as 98.4% among infants, deep-rooted skepticism among some northern communities - often driven by religious conservatism and historical distrust of Western medicine - has contributed to pockets of vaccine resistance [7, 8]. Similarly, in South Sudan**,** cultural practices such as isolation during illness**,** gender-based decision hierarchies, and preference for traditional remedies have interfered with both awareness of and access to measles vaccination, particularly in rural communities. In the DRC and Chad, misinformation about vaccines being tools for sterilization or Western control has gained traction, especially in regions experiencing conflict or weak governance. These beliefs are compounded by the role of informal power structures, such as traditional chiefs or local religious leaders, whose stance on immunization can significantly influence community behavior. In Chad, this dynamic is further complicated by an extremely fragile health infrastructure, resulting in the lowest routine immunization rates among the five countries. Ethiopia presents a particularly complex scenario. Despite having one of the highest reported measles cases counts in Africa, cultural barriers are deeply tied to the geographic and ethnic diversity of the country. Among pastoralist groups**,** frequent migration, limited interaction with state health services, and entrenched belief in traditional healing practices contribute to low coverage and weak trust in vaccination programs [1, 2].

Intersections with Health System Weaknesses and Conflict

The study also revealed that cultural factors do not operate in isolation but are significantly shaped - and at times exacerbated - by systemic weaknesses and ongoing conflict. In conflict zones such as the DRC and South Sudan, the breakdown of health systems not only limits service availability but also erodes public trust, allowing cultural myths and anti-vaccine narratives to flourish unchallenged**.** For example, in the DRC's 2019–2020 outbreak, over 7,000 deaths were reported, largely due to a collapse in immunization campaigns during a period of intense violence and political

instability [37]. Geographic inequities also play a role in the relationship between culture and health. In both Ethiopia and Nigeria, regional disparities—rooted in language, religion, ethnicity, and access - affect how communities interpret and respond to public health messages. Urban populations, who are often more exposed to formal education and media, show greater acceptance of vaccines compared to rural or semi-nomadic groups.

Cultural Beliefs as Barriers and Enablers

While many studies emphasize the obstructive role of cultural beliefs in health-seeking behavior, it is important to recognize that cultural institutions can also act as enablers when properly engaged. Religious and traditional leaders - if educated and co-opted into vaccination campaigns - can serve as powerful allies in dispelling myths and encouraging participation. For instance, faith-based organizations in parts of Nigeria and Ethiopia have facilitated door-to-door immunization efforts and played a role in legitimizing state-led health programs among skeptical populations [16, 17]. Similarly, using oral storytelling, community theatre, and radio broadcasts in local dialects has shown promise in aligning public health interventions with culturally resonant communication forms. Such strategies underscore the need for culturally competent public health messaging that respects local belief systems while promoting scientific understanding.

Knowledge Gaps and Implications for Policy and Practice

As highlighted in the research gap analysis, there is a notable absence of longitudinal, qualitative, and participatory research that deeply explores the evolution of cultural norms around immunization. Most existing studies are cross-sectional and biomedical in orientation, leaving a vacuum in understanding how beliefs shift over time or under conditions such as displacement and climate change [20, 21]. The lack of disaggregated data - by ethnic group, gender, or socio-economic status - also limits the ability to develop finely targeted interventions. For policy-makers and health programmers, these findings suggest that standardized, one-size-fits-all vaccination strategies may not work in culturally heterogeneous settings. Instead, there is a need to integrate community-based participatory research (CBPR) approaches that involve local stakeholders in the design and delivery of immunization campaigns [11, 12].

Conclusion

This study concludes that measles-related child mortality in Africa - especially in Nigeria, the Democratic Republic of Congo (DRC), Chad, Ethiopia, and South Sudan - is not solely driven by biomedical shortcomings, but critically influenced by socio-cultural and systemic dynamics. Collectively, these five countries accounted for over 60% of Africa's measles cases in 2023, with Nigeria and Ethiopia recording 12,820 and 16,340 confirmed cases, respectively. DRC's 2019–2020 outbreak alone led to over 7,000 measles-related child deaths**,** making it one of the deadliest in recent global history. Chad continues to report routine immunization coverage rates below 40%**,** and South Sudan faces both geographical inaccessibility and low health service utilization, particularly in rural and conflict-affected communities.

The study's comparative analysis revealed that cultural beliefs, traditional health systems, religious worldviews, and social norms serve both as barriers and potential facilitators of vaccine acceptance. In many communities, traditional healers and elders hold greater influence over health behaviors than formal medical personnel. For example**,** 58% of parents in rural Chad and 63% in parts of South Sudan reported reliance on spiritual or herbal remedies for childhood illnesses before considering formal immunization. Similarly,

ethnographic insights from Ethiopia reveal that measles is sometimes viewed as a "rite of passage," thus reducing the perceived urgency for vaccination. Statistical trends across these regions consistently demonstrate a negative correlation between vaccine hesitancy and immunization coverage, with coverage rates as low as 43% in South Sudan and 47% in DRC in high-risk zones. Misinformation, amplified by oral transmission and radio narratives, has further reinforced community fears, with nearly 40% of Nigerian caregivers in certain northern states citing fear of sterility or religious objections as reasons for vaccine refusal. To reduce measles-related child mortality, the study underscores the urgent need for culturally grounded, participatory interventions that leverage trusted community structures - such as faith-based organizations, women's groups, and local chiefs - in disseminating accurate health information. Equally critical is the integration of indigenous knowledge systems into public health planning, supported by longitudinal, mixed-methods research that tracks shifting belief patterns over time.

Ultimately, combating measles in these contexts requires more than vaccines - it requires community trust, inclusive health communication, and adaptive health systems. If Africa is to achieve the WHO Measles and Rubella Strategic Framework 2021–2030 targets, strategies must align biomedical goals with cultural realities, ensuring no child is left behind due to a preventable disease shaped by avoidable social barriers.

Declaration of No Conflict of Interest

The authors declare that there are no known financial, personal, or institutional conflicts of interest that could have influenced the conduct, analysis, or interpretation of this research. Neither the authors nor their academic collaborators maintain any financial, commercial, legal, or professional affiliations with entities or individuals that may pose a potential conflict. This study was undertaken with full academic independence, and all findings presented are the result of rigorous literature review and objective scholarly analysis.

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