African Journal of Social and Behavioural Sciences (AJSBS)
Volume 15, Number 6 (2025) ISSN: 2141-209X

A MIXED-METHODS STUDY OF COMMUNITY-BASED HEALTH INTERVENTIONS AND UTILISATION OF CHILDHOOD HEALTHCARE SERVICES IN SOUTHERN SENATORIAL ZONE, PLATEAU STATE, NIGERIA

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ABSTRACT: Utilisation of childhood healthcare services remains low in many communities around the globe. This is particularly true for many low-income countries, including Nigeria, contributing to poor child health outcomes. This study explores the potential of community-based solutions to enhance access and service uptake in the Southern Senatorial Zone of Plateau State, Nigeria. A mixed-methods approach was adopted. Quantitative data were collected from 384 respondents using structured questionnaires, while qualitative insights were drawn from key informant interviews (KIIs) with healthcare workers, community leaders, women's group leaders, and NGO representatives. The study was guided by Andersen's Behavioural Model, the Social Ecological Model, Community Empowerment Theory, and the Diffusion of Innovations Theory. Findings show that 85.9% of respondents had neither contributed to nor benefited from community-based healthcare financing initiatives. Existing interventions, such as immunisation and nutrition education, face challenges including poor infrastructure, inadequate funding, and a shortage of trained personnel. Traditional and religious leaders play a crucial role in promoting healthcare awareness; however, persistent barriers, including poor road access, electricity shortages, insecurity, and household poverty, limit its utilisation. Community-driven strategies supported by local ownership and responsive health systems can improve childhood healthcare service uptake. Recommendations include strengthening community health insurance schemes, leveraging mobile health technologies, improving infrastructure, training and incentivising health workers, and fostering continuous community engagement. Achieving sustainable outcomes will require multi-sectoral collaboration, aligned policies, and context-specific implementation rooted in community realities.

Keywords: Community-Based Health, Childhood Healthcare Services, Rural Health, Plateau State, Primary Health Care (PHC)

INTRODUCTION

Globally, child health remains a critical priority in public health policy and development strategies. Despite global advances in medicine and healthcare systems, the world continues to lose millions of children under the age of five every year to preventable causes. According to the United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME), an estimated 4.9 million children under age five died in 2022, with the highest burden concentrated in sub-Saharan Africa (UN IGME, 2023). Many of these deaths are attributed to preventable and treatable conditions such as pneumonia, diarrhoea, malaria, measles, and neonatal complications—all conditions that effective and timely health interventions could address. In the African context, Nigeria presents one of the most daunting child health challenges. As of 2020, Nigeria was responsible for 31% of global under-five deaths, with an estimated 844,000 children dying before their fifth birthday (WHO, 2021). The situation has seen marginal improvement but remains deeply concerning. According to the Nigeria Demographic and Health Survey (NDHS, 2023-24), the national under-five mortality rate stood at 110 deaths per 1,000 live births. This rate is far above the global average and significantly undermines the country's efforts to achieve Sustainable Development Goal 3, which aims to end preventable deaths of newborns and children under five by 2030.

The underlying causes of Nigeria's persistently high childhood mortality and poor health outcomes are multifaceted. Socioeconomic disparities, limited access to quality healthcare, low immunisation coverage, inadequate maternal care, malnutrition, and poor sanitation are among the key contributors. For instance, UNICEF (2024) reports that approximately 33% of Nigerian children are stunted due to chronic malnutrition, and only 36% of children aged 12–23 months are fully immunised. These issues are often exacerbated in rural and semi-rural areas like Southern Plateau State, where healthcare access is hindered by poor infrastructure, insecurity, health worker shortages, and entrenched cultural beliefs that discourage formal healthcare utilisation.

Southern Plateau State, located in north-central Nigeria, encompasses diverse ethnic communities spread across rural and semi-urban areas. Health services in the region are largely dependent on primary health care (PHC) facilities, many of which are under-resourced, poorly staffed, and lack essential medical supplies. The exodus of health workers due to insecurity and poor working conditions has further strained service delivery (Punch Healthwise, 2023). Moreover, deep-rooted cultural beliefs often affect health-seeking behaviours, with many caregivers relying on traditional healers or home remedies for childhood illnesses. The combination of these structural and socio-cultural factors has created a gap between the availability and actual utilisation of child healthcare services. Efforts have been made at the national and subnational levels to tackle these issues. One of the notable national responses was the introduction of the Midwives Service Scheme (MSS) in 2009, aimed at increasing skilled birth attendance and maternal and child health coverage in underserved areas (Alubo et al., 2020). While the scheme has had some successes, its sustainability and coverage have been limited by funding shortfalls and administrative challenges. Furthermore, donor-driven interventions, such as those supported by UNICEF, GAVI, and the World Bank, have also promoted routine immunisation and community-based maternal and child health programs. However, these efforts often lack continuity once funding ends.

In recent years, attention has increasingly turned towards community-based approaches as a sustainable solution to improving health outcomes, particularly for children. Community-based health care is rooted in the principle of involving local populations in planning, implementing, and monitoring health services. These approaches leverage local resources, traditional institutions, and social capital to deliver context-appropriate and culturally sensitive healthcare solutions. According to WHO (2022), community-based interventions—including home visits by community health workers, health education sessions, and peer support groups—have shown positive effects in increasing immunisation rates, improving care-seeking behaviours, and reducing neonatal and child mortality. In Nigeria, several community-based health initiatives have emerged through collaborations between local governments, NGOs, faith-based organisations, and community leaders. For example, the engagement of Community Health Influencers, Promoters and Services (CHIPS) agents has been instrumental in bridging the gap between healthcare facilities and households. These agents help with basic health education, identification of sick children, and referrals to health facilities.

Despite these efforts, utilisation rates remain suboptimal due to structural inefficiencies, lack of community ownership, poor supervision, and inadequate integration into the broader health system. The situation in Plateau State is even more critical in the face of violent herdsmen invasion. The state is not mentioned among the 19 States across the country that are currently in the implementation phase at various stages, ranging from State training of Trainers to full deployment of CHIPS Personnel (National Primary Health Care Development Agency (NPHCDA, 2025). There is thus a pressing need to revamp the existing strategies and identify scalable, community-driven models that can foster greater utilisation of childhood health care services. Therefore, this study sets out to explore the role of community-based solutions in improving the utilisation of childhood healthcare services in Southern Plateau State.

LITERATURE REVIEW

This literature review critically explores the role of community-based solutions in enhancing the utilisation of childhood healthcare services, with a particular focus on the Southern Senatorial Zone of Plateau State, Nigeria. Despite the expansion of formal healthcare infrastructure, utilisation of essential child health services remains suboptimal, especially in rural and underserved communities. The review is structured to examine empirical and theoretical insights from Nigeria and comparable sub-Saharan African contexts, highlighting how community-led initiatives, local cultural dynamics, and systemic factors interact to shape health-seeking behaviour and service uptake. It synthesizes findings on the effectiveness of community-based strategies—such as the deployment of community health workers, the engagement of religious and traditional leaders, and the use of mobile health technologies—in mitigating both supply-side and demand-side barriers. By integrating conceptual models such as Andersen's Behavioural Model, the Social Ecological Model, Community Empowerment Theory, and the Diffusion of Innovations Theory, the review provides a multidimensional understanding of how trust, access, cultural beliefs, and structural determinants influence healthcare utilisation. This foundation underscores the need for participatory, culturally responsive, and sustainable interventions tailored to the realities of local communities in Southern Plateau and similar low-resource setting**s.**

Community-Based Solutions

Community-Based Solutions (CBS) refer to health initiatives that are designed, implemented, and sustained by local communities to address specific health challenges. These solutions emphasize active participation, local knowledge, and shared ownership, which collectively enhance their sustainability and cultural appropriateness (Laverack, 2021). CBS structures typically include community health committees, local volunteers, civil society organizations, and religious or traditional institutions—all collaborating to improve health service delivery and uptake. In low- and middle-income countries such as Nigeria, CBS have played a pivotal role in expanding healthcare access in hard-to-reach areas. The Community Health Influencers, Promoters and Services (CHIPS) programme in Nigeria, for instance, deploys trained agents to deliver health education, monitor child growth, and refer patients to health facilities for essential care (Oyeniyi et al., 2023). These interventions build trust and help mitigate geographical, economic, and cultural barriers to healthcare.

Recent studies across sub-Saharan Africa further demonstrate the effectiveness of CBS. In Ghana, Boateng et al. (2022) examined the role of Community Health Management Committees (CHMCs) and found that their involvement in health facility oversight and maternal health promotion significantly improved service uptake in rural communities. Similarly, a study in Kenya by Wambua et al. (2023) highlighted how community health volunteers (CHVs), when adequately trained and supervised, contributed to increased childhood immunisation rates and early detection of malnutrition. Uganda's Village Health Teams (VHTs) also represent a successful model; according to Nabirye et al. (2021), their involvement in community sensitisation and health surveillance helped reduce child morbidity and increased timely referrals, especially during the COVID-19 pandemic. CBS are most impactful when underpinned by empowerment principles, capacity-building, and accountability. Empowering local actors to identify health priorities and co-design solutions fosters deeper community commitment and ensures interventions are tailored to specific socio-cultural contexts (Ezeh et al., 2022). Moreover, the use of accessible communication platforms such as town hall meetings, radio broadcasts, and faith-based gatherings has proven effective in disseminating health messages (Aliyu & Madaki, 2021).

In Southern Plateau State, where formal health systems are often constrained and communities are socio-culturally diverse, CBS approaches remain highly relevant. Integrating community structures into health planning processes not only enhances transparency and service ownership but also results in higher levels of trust and increased utilisation of child health services (Aliyu & Madaki, 2021; Letsa & Abrokwa, 2023). Thus, evidence from Nigeria and comparable African contexts shows that CBS are not only context-sensitive but also scalable models for improving health outcomes in resource-limited settings.

Utilisation

Utilisation, in the context of health services, refers to the actual use of healthcare services by individuals or communities when the need arises. It is a critical determinant of health outcomes and is shaped by a range of factors, including accessibility, affordability, awareness, and cultural acceptability (Andersen, 1995; Okeke et al., 2022). Utilisation is typically assessed using

indicators such as immunisation coverage, antenatal and postnatal care attendance, frequency of outpatient visits, and uptake of preventive services like deworming and vitamin supplementation. According to Andersen's Behavioural Model, health service utilisation is influenced by three broad categories: predisposing factors (e.g., beliefs, education, age), enabling factors (e.g., household income, distance to facilities, transportation), and perceived or evaluated need (e.g., severity of illness or perceived benefits of care). In rural areas of Nigeria, utilisation often remains low despite the presence of healthcare facilities. Barriers such as long distances to clinics, poor road networks, cost of services, low levels of health literacy, and general distrust in health systems constrain uptake (Ameh et al., 2021).

Community-based interventions have proven effective in mitigating these barriers. Outreach services, home visits by trained health workers, community health volunteers, and mobile clinics help bridge both physical and psychological gaps between caregivers and the formal health system (Ayede et al., 2023). A study in Ghana by Asare et al. (2022) revealed that the use of community-based health planning and services (CHPS) compounds significantly increased child immunisation rates and antenatal visits, particularly when local health staff were culturally aligned with the community. Similarly, Were et al. (2023) reported that in Kenya, the presence of community health assistants and consistent health education led to increased maternal service utilisation in peri-urban settlements of Nairobi County. In Uganda, a study by Atuyambe et al. (2021) found that when village health teams (VHTs) engaged in regular household outreach and health education, caregivers were more likely to utilise services for fever, diarrhoea, and childhood immunisations. These findings confirm that sustained community engagement enhances trust and reinforces positive health-seeking behaviour. Additionally, Nabirye et al. (2023) demonstrated that in Uganda's Wakiso District, integrating male involvement and community dialogue sessions into maternal health outreach improved both knowledge and actual service uptake.

In Southern Plateau State, Nigeria, utilisation of childhood health services continues to lag despite increased availability of healthcare infrastructure. Cultural beliefs about childhood illnesses, misconceptions about vaccinations, religious reservations, and poverty persist as major deterrents to service use (Ibrahim et al., 2022). Effective strategies to counter these challenges include community mobilisation, peer education, radio campaigns, and the engagement of religious and traditional leaders in health promotion efforts.

Overall, evidence across multiple African contexts suggests that boosting health service utilisation requires not only improving facility availability but also implementing culturally responsive, community-driven strategies that foster trust, reduce access barriers, and improve awareness.

Childhood Healthcare Services

Childhood healthcare services refer to a continuum of essential health interventions designed to support the survival, growth, and holistic development of children from birth through adolescence. These services typically encompass immunisation, growth monitoring, nutritional supplementation, deworming, treatment of common childhood illnesses such as malaria and pneumonia, and health education for caregivers (WHO, 2023). These interventions are not only vital for child well-being but are also strong indicators of a nation's overall public health

performance and development priorities. Despite global progress, service delivery in rural parts of Nigeria continues to face systemic challenges, including underfunding, workforce shortages, supply chain inefficiencies, and inadequate community involvement (UNICEF, 2022). These barriers are particularly pronounced in regions such as the Southern Plateau, where childhood mortality remains high due to largely preventable and treatable conditions such as diarrhoea, acute respiratory infections, and malnutrition (NPHCDA, 2021).

Access to and utilisation of childhood healthcare services are influenced by a combination of structural and behavioural factors. These include the physical proximity of health facilities, availability and competency of healthcare workers, affordability of services, parental health literacy, and cultural perceptions of illness and care (Obembe et al., 2021). Trust in the healthcare system and previous experiences with service providers also significantly shape caregiver decisions. Recent regional experiences from other parts of Africa reinforce the value of innovative, community-integrated approaches to childhood healthcare delivery. In Ghana, Aboagye et al. (2023) reported that integrating child health outreach services within the Community-Based Health Planning and Services (CHPS) model led to improved vaccination coverage and reductions in under-five morbidity in remote districts. Similarly, Okeyo et al. (2022) in Kenya found that the use of community health workers (CHWs) in delivering Integrated Community Case Management (iCCM) significantly improved early treatment for fever and diarrhoea, especially when services were coupled with ongoing community education.

In Uganda, Namusoke et al. (2021) documented the effectiveness of mobile clinics and village health teams (VHTs) in improving access to immunisation and neonatal care among hard-to-reach populations. Additionally, Musoke et al. (2024) highlighted how digital tools used by CHWs for data reporting and referrals in Uganda enhanced follow-up care and timeliness in managing sick children. These initiatives were often strengthened by collaborations with religious and traditional leaders, whose influence helped improve community trust and compliance with child health interventions. In Nigeria, efforts to scale similar community-based models—such as the deployment of Community Health Influencers, Promoters and Services (CHIPS) agents—have shown promising outcomes. Ezenwa et al. (2023) observed that in Plateau and Nasarawa States, CHIPS agents contributed to increased immunisation uptake, improved maternal referrals, and timely management of common childhood illnesses. The evidence suggests that bridging the gap in childhood healthcare service delivery, especially in rural and underserved areas, requires decentralised, culturally sensitive, and community-embedded strategies. Strengthening such approaches, while addressing systemic gaps in financing, logistics, and workforce training, remains central to improving child health outcomes across the continent.

Trust and Health Beliefs

Trust and cultural health beliefs significantly shape health-seeking behaviours for childhood illnesses. In Nigeria, Hill et al. (2022) explored how caregivers' perceptions influence the use of facility-based services for under-five children. Using qualitative data from the 2019 Verbal and Social Autopsy study (VASA), the study found that traditional beliefs in supernatural causes of illness and fatalism contributed to delayed care-seeking. Recommendations emphasized the need for culturally sensitive communication through trusted community influencers. Similarly,

Adebayo and Oladokun (2023) conducted a mixed-methods study in Abuja and found that while structural access to services improved, cultural and religious perceptions still moderated service utilization. They recommended improving facility infrastructure and addressing misconceptions through community-based outreach.

In Ghana, Denham (2013) documented how belief in "spirit children" led to child neglect or infanticide. The study advocated community education and the engagement of traditional leaders. In Kenya, Githae-Muriuki and Owour (2023) evaluated the integration of Traditional Birth Attendants (TBAs) into formal healthcare and found that trust in TBAs increased maternal and child service uptake. Uganda's experience, as described by Mirembe and Nabunya (2023), showed how community-led parent-child health communication programs broke down stigma and increased trust in formal services. Collectively, these studies affirm that trust and culturally-rooted health beliefs are key variables in childhood healthcare utilization. However, specific data for Southern Plateau remains unexplored.

Structural Factors

Structural enablers and barriers critically determine service access and quality. In Nigeria, Ezeoke et al. (2022) conducted a household survey in rural Enugu State and found that PHC use was limited due to inadequate infrastructure, long wait times, and frequent drug stockouts. They recommended improving staffing and supply chain efficiency. An earlier study by Eze and Madaki (2021) in Barkin Ladi, Plateau State, identified drug costs, access to traditional healers, and transportation as major barriers. While outdated, the study underscored the persistent infrastructural challenges in Plateau. In Kenya, Waweru et al. (2023) identified critical health system weaknesses, particularly in workforce distribution and community health infrastructure. Their findings indicated that strengthening the health workforce and investing in health posts could improve service delivery. Owusu-Ansah and Osei (2023) in Ghana highlighted that cultural stigma against disabled children had structural implications, as communities often withheld care or delayed access to formal health services. Uganda's Namugaya and Tumwebaze (2023) demonstrated that structural issues such as poverty and systemic inefficiencies hindered the uptake of reproductive health services. While these studies point to structural determinants broadly, few have evaluated the LGA-level realities in Southern Plateau, indicating a gap our study aims to fill.

Community Engagement Models

Community engagement has emerged as a critical pathway for improving health service delivery, particularly in rural settings. Ntoimo et al. (2021) used participatory action research in rural Nigeria and demonstrated that involving communities through ward development committees significantly increased service uptake and accountability. Ibrahim and Adeniyi (2023) supported this in Abuja, where involving community leaders in health governance improved utilization and trust in health services. In Ghana, Nyarko and Boateng (2022) reviewed participatory health interventions and found that community ownership of programs improved responsiveness and relevance of child health services. Achieng and Otieno (2023) in Kenya evaluated partnerships with TBAs and found that formalizing these roles improved referrals and maternal-child outcomes. In Uganda, Tumwine and Nuwaha (2023) assessed community scorecard implementation and reported improvements in

service quality and caregiver satisfaction. While these studies offer strong evidence of the role of community engagement, few focus specifically on childhood health services in the Southern Plateau context.

Conceptual Framework

This framework posits that community-based strategies positively influence utilisation by mitigating enabling and predisposing barriers and aligning service delivery with community expectations. Community-Based Solutions (independent variable) serve as entry points, bringing services closer to the people using grassroots structures like traditional leadership. These interventions impact key mediating variables such as enabling and predisposing factors (e.g., health literacy, accessibility, cost reduction, and trust-building). The mediators directly affect the utilisation (dependent variable) of childhood healthcare services —, influencing whether families seek and adhere to child health interventions like vaccinations or treatment for illness.

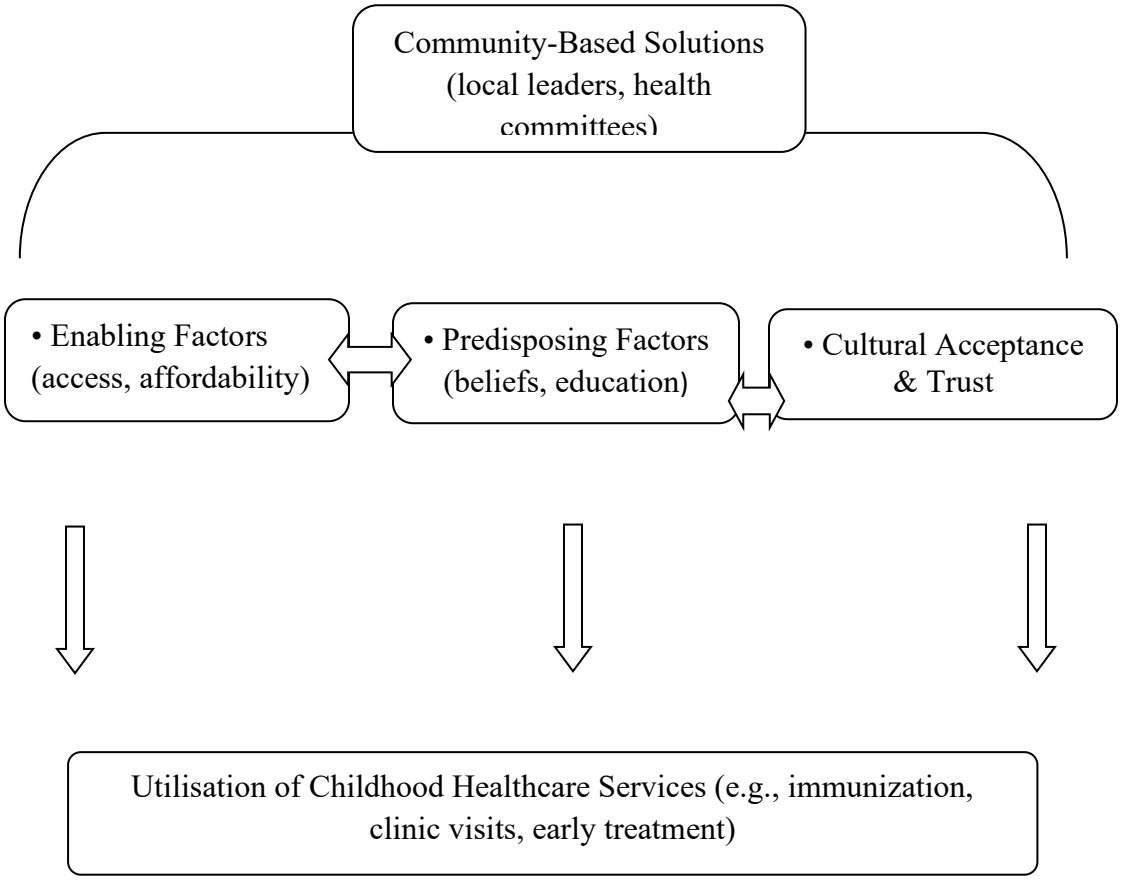

Figure 1: Diagram of the Conceptual Framework of CBS and Utilisation of CHS

Barriers to Childhood Healthcare Utilisation

Utilisation of childhood healthcare services in Nigeria has been historically low due to a complex interplay of social, economic, infrastructural, and cultural barriers. Nigeria has one of the highest

child mortality rates globally, with the under-five mortality rate at 110 per 1,000 live births as of 2023 (NDHS, 2023). In Plateau State, low immunization immunisation rates, underutilisation of antenatal and postnatal care, and delayed treatment of childhood illnesses persist (UNICEF Nigeria, 2024). Key demand-side barriers include poor caregiver knowledge about childhood illnesses, low perceived need for formal healthcare, and entrenched cultural beliefs. For instance, many caregivers in rural Plateau communities still rely on traditional medicine or home remedies for treating common ailments like diarrhoea or fever (Akinyemi et al., 2022). Stigma, religious beliefs, and misinformation also prevent uptake of vaccines and health check-ups. On the supply side, challenges such as inadequate health infrastructure, frequent stockouts of essential drugs, poor staffing, and limited access to qualified personnel have further hindered access. The WHO (2022) notes that in Nigeria, many PHC centres in rural areas operate with only one community health worker, making consistent and quality care unattainable. This is consistent with findings from Okoli et al. (2021), who reported that over 60% of PHC facilities in Plateau lacked running water, electricity, or functioning cold chains for vaccines.

Geographic accessibility is another concern. Many communities in the Southern Plateau are in hilly, rural areas with poor road networks, especially during rainy seasons. Families often walk long distances—sometimes over 10km—to reach the nearest PHC, discouraging routine visits (Adebayo et al., 2021). Insecurity caused by armed herdsmen herdsmen's violent invasions and conflicts has also disrupted healthcare delivery and displaced communities, reducing access even further (Human Rights Watch, 2023).

Community-Based Interventions in Similar Contexts

Evidence from global and regional studies affirms the effectiveness of community-based interventions in improving childhood healthcare utilisation. These strategies typically engage stakeholders such as community health workers (CHWs), traditional leaders, women's groups, and faith-based organisations. In Nigeria, the Community Health Influencers, Promoters and Services (CHIPS) programme is a flagship initiative, involving trained community members who conduct home visits, track immunisation defaulters, and provide, and Services (CHIPS) programme is a flagship initiative that involves trained community members conducting home visits, tracking immunisation defaulters, and providing basic health education. The CHIPS model has led to measurable increases in immunisation coverage (NPHCDA, 2022). Similarly, in Ethiopia and Malawi, CHW-led outreach has significantly reduced neonatal mortality and increased treatment of childhood illnesses (WHO, 2021). Community participation through village health committees has also been pivotal. Evidence from Kenya and Uganda indicates that engaging community members in health planning and monitoring enhances service accountability and uptake (Gavaza & Mberengwa, 2022). In Nigeria, community-based management of acute malnutrition (CMAM) programmes that trained caregivers to detect malnutrition showed increased service utilisation and trust (Lassa et al., 2021).

Mobile health (mHealth) initiatives are emerging tools, particularly in hard-to-reach areas. Projects like mReach in northern Nigeria used text and voice reminders to improve immunisation completion rates by 30% (Adejumo et al., 2023). In Plateau State, pilot mHealth tools supported by WHO and GAVI have improved maternal-child follow-up and countered vaccine

misinformation. Community influencers—particularly religious and traditional leaders—play a vital role in shaping public health behaviour. Integrating immunisation messages into sermons and traditional events has been shown to boost health service uptake (Uzochukwu et al., 2020; Oyebanji, 2022). For sustainability, four key factors are critical: (a) capacity building and incentives for CHWs and community members, (b) integration with the formal health system and government budgeting, (c) cultural contextualisation using local languages and practices, and (d) real-time data feedback to improve responsiveness and trust. Community-based interventions—when participatory, context-specific, and well-integrated—hold strong potential to improve childhood healthcare outcomes in rural settings like Southern Plateau State. Effective models combine CHWs, mHealth, traditional leadership engagement, and community accountability. Long-term success depends on government ownership, adequate resourcing, and active community feedback mechanisms that reinforce trust and continuity in healthcare service utilisation.

Theoretical Framework

This study draws upon four interrelated theoretical frameworks to explore the utilisation of childhood healthcare services through community-based solutions in the Southern Senatorial Zone, Plateau State: Andersen's Behavioural Model of Health Services Use (ABM), the Social Ecological Model (SEM), Community Empowerment Theory (CET), and Diffusion of Innovations Theory (DIT). Each provides a distinct yet complementary lens for understanding health-seeking behaviour and the mechanisms through which community-based interventions can be effectively implemented and sustained. Andersen's Behavioural Model (Andersen, 1995) posits that healthcare utilisation is shaped by predisposing, enabling, and need factors. In the study context, cultural beliefs, distrust in vaccines, limited health knowledge, and poverty act as predisposing and enabling barriers. Additionally, delayed care-seeking behaviour—driven by low perceived need until symptoms worsen—reflects a critical access gap. This model informs the identification of individual-level barriers that hinder service use. The Social Ecological Model (McLeroy et al., 1988) extends this perspective by considering multi-level influences—individual, interpersonal, community, institutional, and policy. This is particularly relevant in rural Nigeria, where household dynamics, community leaders, health system capacity, and broader public health policy jointly influence childhood healthcare utilisation. SEM underscores the necessity of designing interventions that target multiple layers of influence simultaneously.

Community Empowerment Theory (Wallerstein, 2006) frames the role of local participation in fostering sustainable health outcomes. Involving caregivers, youth groups, faith-based leaders, and health committees enhances community ownership, accountability, and responsiveness—key determinants of intervention uptake and continuity. Diffusion of Innovations Theory (Rogers, 2003) explains how health innovations, such as mobile health alerts or task-shifting to community health workers (CHWs), are adopted within social systems. It guides strategies for accelerating uptake by addressing perceived advantages, cultural compatibility, and observability of health practices. Together, these theories offer a robust, integrative foundation for analysing and addressing the multifaceted barriers to child health service utilisation. They also provide a framework for structuring participatory, scalable, and culturally appropriate interventions that are embedded in the community and capable of fostering sustained impact.

MATERIALS AND METHODS

This study employs a mixed-methods, descriptive, cross-sectional design. The quantitative component assesses the level and determinants of utilisation of childhood healthcare services, while the qualitative aspect explores community-based strategies that influence service uptake. This design is appropriate because it allows for the collection of both statistical data and in-depth community insights at a specific point in time. The study was conducted in the Southern Senatorial Zone of Plateau State, Nigeria, which comprises six Local Government Areas (LGAs): Langtang North, Langtang South, Mikang, Qua'an Pan, Shendam, and Wase. The zone is predominantly rural with mixed ethnic groups and varying healthcare accessibility. The area has both public and private health facilities, primary health centres, and active community development associations.

The target population includes primary caregivers (mostly mothers) of children under five years of age, community leaders, traditional birth attendants (TBAs), community health workers, and healthcare providers in primary healthcare facilities, officials from local health authorities involved in child health. For the quantitative component, the sample size was calculated using the Cochran formula:

$$n = \frac{Z^2 pq}{e^2}$$

Where:

- Z = 1.96 (95% confidence level)
- p = estimated prevalence of healthcare service utilisation (e.g., 50% or 0.5, due to lack of precise regional data)
- q = 1 - p = 0.5
- e = margin of error (5% or 0.05)

$$n = \frac{(1.96^2) \times 0.5 \times 0.5}{(0.5^2)} = 384$$

The sample size, therefore, was 384 caregivers. For the qualitative component, purposive sampling was used to select 12 key informant interviews (KIIs) with healthcare workers, community leaders, and representatives from NGOs. A multistage sampling technique was adopted. simple random sampling was used to select 3 LGAs—Langtang South, Quan-Pan and Wase in the Southern Senatorial Zone in the first stage. In the second stage, random selection of 3 wards per LGA. Systematic sampling was used in the third stage to select households with eligible caregivers within selected wards.

For qualitative data, purposive and snowball sampling were employed to identify relevant stakeholders. Structured questionnaires were administered to caregivers to assess their healthcare-seeking behaviours, knowledge, attitudes, and perceived barriers. KII guides obtained insights from healthcare providers, community leaders and others on barriers, facilitators, and innovations in childhood healthcare service delivery. Quantitative data was analysed using SPSS (Version 26).

Descriptive statistics (frequencies and percentages) summarised sociodemographic data and healthcare utilisation. Inferential statistics (Multiple Regression) was used to test associations between variables. Qualitative data was transcribed, coded, and analysed thematically using NVivo software.

RESULTS

The demographic profile of respondents, as presented in Table 1, provides important context for understanding the utilisation of childhood healthcare services in the Southern Senatorial Zone of Plateau State, Nigeria. The data highlight age distribution, religious affiliation, marital status, family structure, and household size—factors that significantly shape healthcare-seeking behaviour at the community level.

Table 1 below reveals that the respondents were predominantly between the ages of 18 and 29 years, accounting for 58% (27.8% for the 18–23 age range and 30.2% for the 24–29 age range) of the total sample. This concentration within the reproductive and parenting age range is critical, as these age groups are typically the primary caregivers of young children. The presence of younger respondents (12–17 years, 9.6%) and a modest representation of older adults (41–45 years, 6.2%, and 46+ years, 3.0%) suggests a generational mix, albeit with a youthful majority. This youth-dominant profile may influence health-seeking behaviours, as younger caregivers may have greater exposure to health information and a higher adaptability to community-based healthcare interventions. The majority of respondents identified as Christians (69.4%), followed by Muslims (27.7%), and a small fraction as traditionalists (3.0%). Religion often plays a strong role in health beliefs and behaviours in Nigerian communities. The predominance of Christianity may influence the reach and design of faith-based community health programs. Collaborative engagement with churches and religious groups may therefore serve as a strategic entry point for community-based interventions aimed at improving childhood healthcare uptake.

Table 1: Percentage Distribution of Demographic Characteristics of the Study Participants

Demographic Features	Frequency	Percentage (%)
Age Group		
12–17 years	33	9.6
18–23 years	97	27.8
24–29 years	105	30.2
30–35 years	49	14.0
36–40 years	32	9.2
41–45 years	22	6.2
46 & above years	10	3.0
Religious Affiliation		
Christian	241	69.4
Muslim	96	27.7
Traditional	11	3.0
Marital Status		

Married	175	50.2
Divorced	74	21.2
Separated	73	21.1
Single	26	7.5
Type of Marriage		
Monogamy	143	41.0
Polygamy	205	59.0
Type of Family		
Nuclear	140	40.2
Extended	208	59.8
Family/Household Size		
Less than 3	59	17.0
4–7	79	22.7
8–11	98	28.0
12+	112	32.3

More than half of the respondents (50.2%) were married, with a notable proportion either divorced (21.2%) or separated (21.1%), while only 7.5% identified as single. This indicates that many households are led by caregivers who may be solely responsible for child welfare due to marital instability. Such dynamics may impact both decision-making and financial capacity to seek formal healthcare services for children, thereby necessitating targeted community support for single-parent or vulnerable families. Data on marriage type revealed that 59% of respondents were in polygamous unions, while 41% were in monogamous relationships. In terms of family structure, extended families (59.8%) were more common than nuclear families (40.2%). These patterns reflect cultural norms in the region and have implications for childhood healthcare. Extended and polygamous households often have higher numbers of children and may experience resource constraints, leading to prioritisation of healthcare for some children over others. Moreover, decision-making on child health in such settings may be influenced by multiple actors, potentially causing delays in healthcare utilisation.

A substantial number of respondents lived in large households, with 60.3% reporting family sizes of 8 or more members (28% for 8–11 members and 32.3% for 12 or more). Only 17% of respondents lived in households with fewer than three members. Large household sizes may strain financial resources and contribute to under-utilisation of childhood healthcare services, especially when services require out-of-pocket payment. Community-based solutions, such as mobile clinics or community health insurance schemes, could alleviate this burden by bringing affordable services closer to families and reducing the logistical and financial barriers posed by large family sizes. Overall, the demographic characteristics of the respondents point to a youthful, religiously inclined, predominantly married population with extended family structures and large household sizes. These features highlight the need for community-based interventions that are culturally sensitive, family-centred, and financially accessible. Programs designed to improve the utilisation of childhood healthcare services in the Southern Senatorial Zone must consider these social dynamics to mobilise communities and improve child health outcomes effectively.

Socio-Economic Characteristics of Respondents

The socio-economic profile of the 348 respondents surveyed provides crucial insight into the broader structural and economic context affecting the utilisation of childhood healthcare services in Plateau State's Southern Senatorial Zone. These characteristics are not only descriptive but also indicative of potential barriers and enablers to accessing care for children within rural and underserved communities.

As shown in Table 2, educational levels among respondents were generally low, with a majority (39.1%) having only primary education and 23.0% reporting no formal education. Only a small fraction (5.6%) attained tertiary education. This distribution implies limited health literacy within the population, which can adversely affect knowledge, attitudes, and practices related to preventive and curative child health services. Insights from the KIIs further support this fact. According to a woman opinion leader, in Pal ward,

> "…you see, I stopped (schooling) at Junior Secondary School (JSS) two because I got pregnant and needed to get married. It has been a long time now, and things are difficult."

Another religious leader held that

> ..our people are not as educated as they ought to be. A lot of them stop going to school because of different and numerous challenges. But for the girls, it is due to getting pregnant. Today, most of them don't know how to take care of the children and that is very bad. With increasing detachments from older grandmothers, you see that the health conditions of children are no better (Pastor ECWA Church).

Occupationally, respondents were primarily engaged in farming (35.3%) and mining (21.1%), followed by artisan work (17.6%) and civil service (9.8%). Petty trading and other forms of employment made up smaller proportions. The dominance of subsistence-based occupations suggests a population with irregular or low-income streams, which has implications for healthcare affordability and prioritisation of child health. Notably, 5.6% of the sample indicated that they had no employment.

Table 2: Percentage Distribution of Socio-Economic Characteristics of Respondents

Socio-Economic Features	Frequency	Percentage (%)
Educational Level		
No Formal Education	80	23.0
Primary	136	39.1
Secondary	112	32.3
Tertiary	20	5.6
Occupation		
Farming	123	35.3
Civil Service	34	9.8

Artisan	61	17.6
Mining	73	21.1
Petty Trading	25	7.1
Others	13	3.6
None	20	5.6
Estimated Monthly Income (EMI)		
Less than ₦1,000.00	101	28.9
₦1,001 – ₦5,000.00	117	33.7
₦5,001 – ₦10,000.00	80	23.0
₦10,001 – ₦50,000.00	37	10.7
₦50,001+	13	3.8
Total	348	100.0

Monthly income levels further reinforce the picture of economic precarity. Approximately two-thirds of the respondents (62.6%) reported earning less than ₦5,000 per month. Only 3.8% earned above ₦50,000 monthly. This is further corroborated by responses from an KII with a community leader who held that

> Our people are very poor. You can see it yourself. Just look at our lives, how much is *kwodogo* (daily paid farm labour)? How many times in a week will you see one especially in off farming season? Things are not this bad before. The small money you have cannot buy enough food to go round your family. When these children are sick it is a bigger challenge because no treatment is free now including the traditional healers (Ward Youth Leader, Fajul, Langtang South).

This low-income bracket is a critical determinant of healthcare underutilisation, especially where out-of-pocket payments for drugs, transportation, or diagnostic services are required. Without community-based health financing mechanisms or subsidies, families are likely to delay or avoid seeking care for childhood illnesses. The data indicate a pressing need for context-sensitive community-based solutions that are responsive to the socio-economic realities of households in the Southern Senatorial Zone. Strategies such as mobile clinics, subsidised or free child health services, community health insurance schemes, and intensive health education campaigns could play a significant role in bridging the service utilisation gap. Moreover, strengthening local livelihoods and integrating economic empowerment initiatives into community health programs may indirectly enhance families' capacity to access timely healthcare for their children.

Utilisation of CHSs at Health Facilities

In this study, visits to the nearest PHC and others by participants are critical indicators of utilization. The variables considered here include ever taken child(ren) to PHC and frequency of taken child(ren) to PHC and other facilities for CHSs. The results are presented in a table and chart below

Table 3: Ever Taken Child(ren) to PHC by LGAs

	Responses		
	Yes	No	Total
LGA	N (%)	N (%)	N (%)
Langtang South	54 (42.2)	74(57.7)	128 (100.0)
Wase	62 (48.3)	66 (51.6)	128 (100.0)
Quanpan	77 (60.2)	51(39.8)	128 (100.0)
Total	193 (50.3)	191(49.7)	384 (100.0)

The table above indicates that a greater proportion (66.6%) of the respondents across all Senatorial zones have ever taken child(ren) to a PHC. However, many (33.4%) of the study participants responded "No" implying they have never sought CHSs for their child(ren) in a PHC. Furthermore, majority (48.3%) of those that responded "Yes" are from Quan-Pan. This was followed by those from Wase (28.4%). Also, more than half (57.7%) of the study participants that responded "No" are from Langtang South followed by those from Wase (51.6%). This implies that ever taken child(ren) to PHCs varies according to LGAs It can therefore be deduced that study participants from Quan-Pan utilize more of CHSs at PHCs than their counterparts.

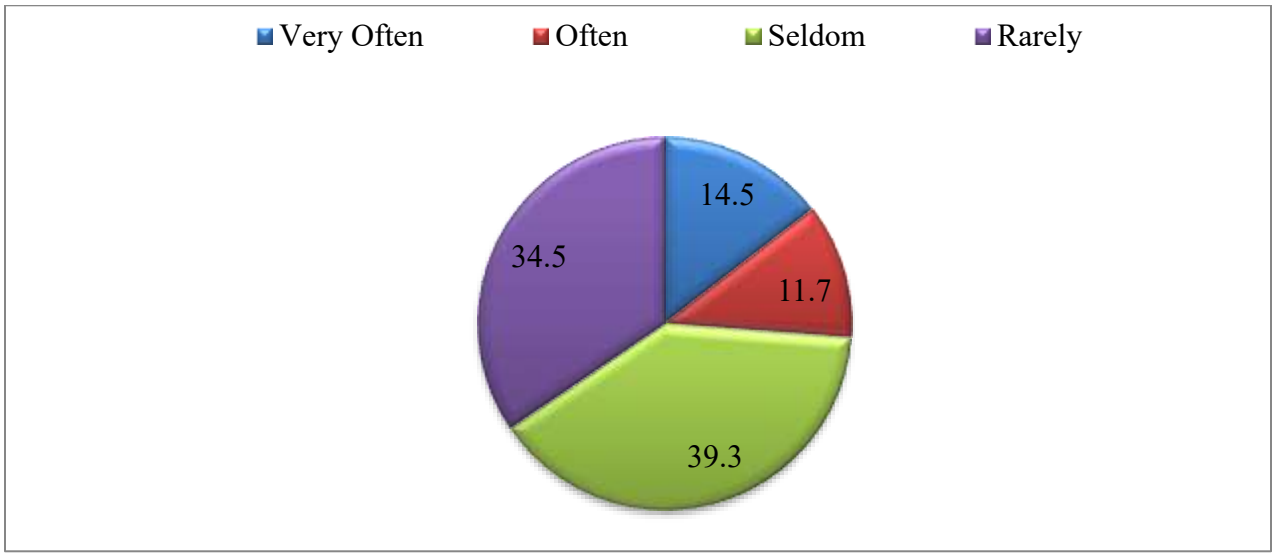

Fig. 2: Frequency of Taken Child(ren) to the PHCs for CHSs

From the above figure, majority (39.3%) of the respondents indicate that they seldom take their child(ren)/wards to the PHC for CHSs. 153 (34.5%) of the respondents say they rarely take their child(ren)/wards to the PHC for CHSs. Also 64 (14.5%) and 52 (11.7%) of the respondents very often and often respectively take their child(ren)/wards to the PHC for CHSs.

Table 4: Reasons for Not ever Taken Child(ren) to PHCs by Respondents

	Mentioned		Not Mentioned		Total	
Reasons	**N**	**%**	**N**	**%**	**N**	**%**
It is against my religious belief	23	10.4	199	89.6	222	100.0
My spouse is against it	59	26.6	163	73.4	222	100.0
It is costly	213	96.0	9	4.0	222	100.0
The child(ren) is/are not ill	220	99.1	2	0.9	222	100.0
I prefer to use traditional medicine	218	98.2	4	1.8	222	100.0
Others	79	35.6	143	64.4	222	100.0

It is clear from the above table that "the child(ren) is/are not ill" (99.1%) is the leading reason mentioned by the respondents that have never taken their child(ren)/wards to the PHCs. This is followed by 'I prefer to use traditional medicine' as indicated by 218(98.2%) of the study participants. Also 213 (96.0%) of the respondents attribute the reason for never taken their child(ren)/wards to the PHCs did CHSs to 'it is costly'. Reasons such as "it is against my religious beliefs' and 'my spouse is against it' were seldom mentioned as very strong reasons respondents that have never taken their child(ren)/wards to the PHCs.

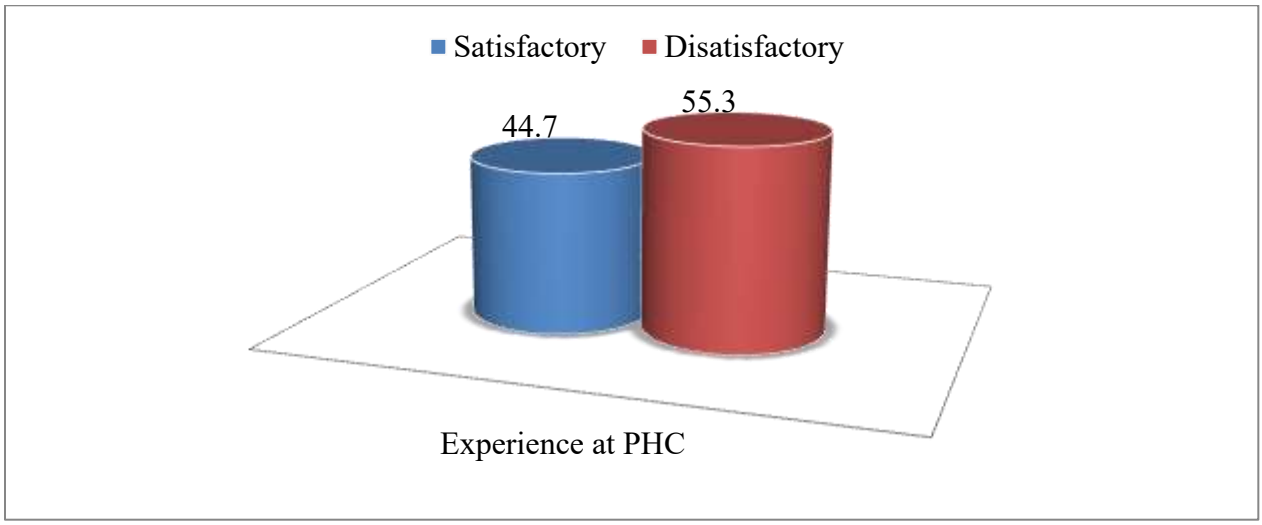

Fig. 3 Description of Experience at PHCs by Respondents

It can be inferred from the data in the figure above that those who use CHSs at the PHCs are dissatisfied with the services offered at those centers. This is so as more than half (55.3%) of the respondents that have taken their child(ren)/wards to the PHC for CHSs described their experience at PHCs as dissatisfactory. This is further supported by more insights from the IDIs with the community and opinion leaders. According to a male youth leader

> I was not happy at all the last time I took my son there. They (health workers) wasted all my time and by the time it finally came to our turn, the drugs were exhausted. They wrote

(prescribed) some drugs and I have travel to Shendam to purchase them. It is not easy to get vehicle fast around here…

A health worker said

…you cannot easily satisfy our people. The treatment we give actually takes time before results are achieved, but people want fast results when their child(ren)/wards are sick. If you bring your child for treatment and the symptoms are still there, then certainly you cannot be satisfied, and that is one of the major reasons you see them going for traditional treatment, which they consider more effective, faster, cheaper and readily available.

Another woman religious leader and a young mother posited that

It is going to be very difficult for me to take my child there again for any service. The nurses are not friendly, especially if they are not familiar with you. They seemed to detest young mothers and their babies…they quarrel about everything, and you wonder whether they are not paid for the job.

Utilization of Immunization Services (IMSs)

Under this subsection, the focus of the presentation is the use of IMSs. Responses were gathered on whether respondents normally bring out their child(ren)/wards for IMSs. The reasons for or against bringing out children to IMSs were examined. The results are presented in a chart and tables below.

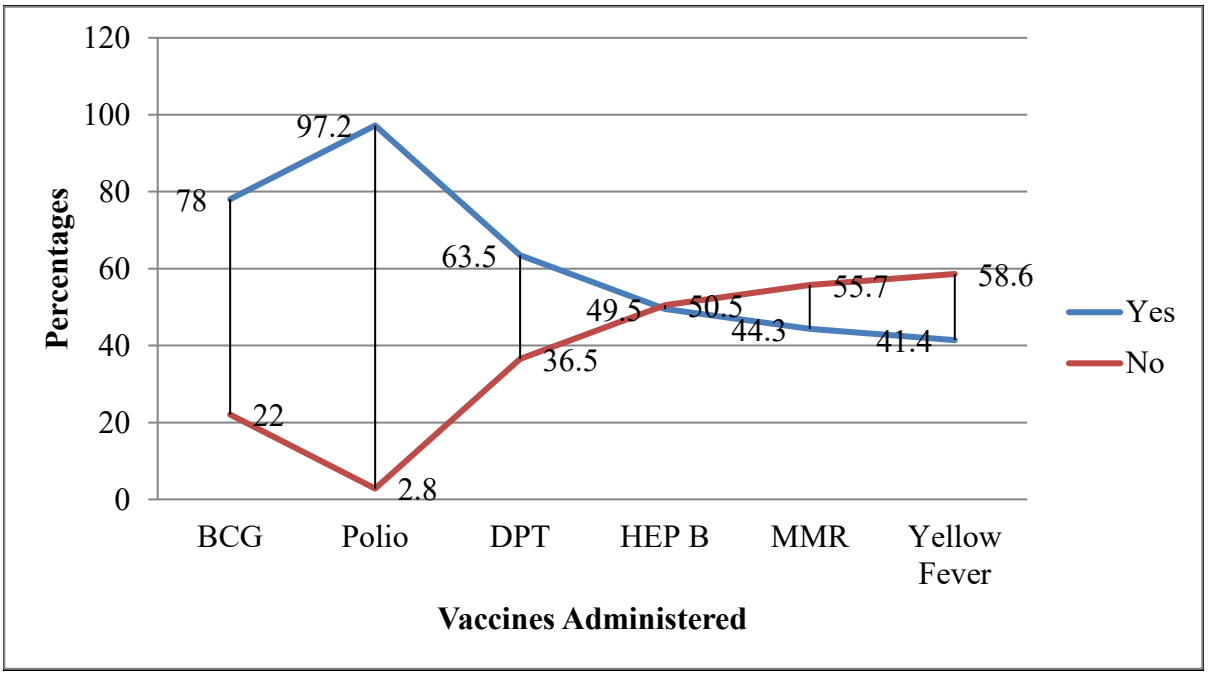

Fig. 4 : Chart Showing Trend of Vaccinations Baby(ies) Receive

From the Chart, a trend that can be deduced is that there is a high rate of IMSs dropout as fewer children are receiving the most basic vaccines to be given in later age. It is glaring that the majority (97.2%, 78.0% and 63.5%) of the sighted VCs received Polio vaccine, BCG and DPT, respectively (in the 1st two weeks of birth). On the other hand, more than half (58.6%, 55.7% and 50.5%) of the respondents indicate "No" yellow fever, MMR and Hep B vaccines respectively. While most participants recognise the importance of vaccines, they do not consider those services as a priority. The reasons for bringing out child(ren)/wards, high dropout rate as well as not bringing out child(ren)/wards are presented in the tables below.

Table 5: Reasons why Parents do not bring out child(ren)/wards for IMSs

Reasons	Mentioned N (%)	Not Ment. N (%)	Total N (%)
It is against my religious belief	11(7.6)	133(92.4)	144(100.0)
My spouse is against it	21(14.6)	123(85.4)	144(100.0)
It is costly	17(11.8)	127 (88.2)	144(100.0)
The last time my child was taken for IM, the child took ill	81 (56.3)	63 (43.7)	144(100.0)
Whether a child had IMSs or not, the child still fell sick	71 (49.3)	73 (50.7)	144(100.0)
Health workers hoard the vaccine	34(23.6)	110(76.4)	144(100.0)
I prefer to use traditional medicine	140 (97.2)	4 (2.8)	144(100.0)
Others	78(54.2)	66 (45.8)	144(100.0)

The mentioned reasons against bringing out children for IMSs in RAPS, as presented in the table, show that "I prefer to use traditional medicine" (97.2%) is the leading reason mentioned by the study participants. This is followed by 'the last time my child was taken for IMSs, the child took ill' (56.3%). Others (54.2%) and whether a child had IMSs or not, the child still falls sick (49.3%) are also mentioned as reasons against bringing out children for IMSs. On the other hand, 'it is against my religious belief' (92.4%), 'it is costly' (88.2%), 'my spouse is against it' (85.4%) and 'health workers hoard the vaccine' (76.4%) in order are less mention or not mentioned as reasons against bringing out their children for IMSs.

Also, IDIs with the health workers and community leaders reveal the details of the reasons against bringing out children/wards for IMSs. A CHEW posited that "We don't have any problem with immunisation because they bring out their children, but some people don't bring out their children because their church forbids it" (Female, CHEW).

According to a mother and women's leader

> The truth here is that all these *rigankafis* (vaccinations) are good as they say but when your child is strong, the next priority is to look for food. I most times go to the farm and forget the date for my child's *rigankafi*. It is not deliberate, these children, my husband and I need to eat, and without going out to look for food, it will be difficult.

A community opinion leader held that.

> See, our people in the past never had such injections or drops, and they even lived longer than we are doing now. I am not saying it is bad to give the vaccines. What I am saying is that children need food, and you have to provide that first. With or without *rigankafi,* a child destined to fall sick or even die will do so anyway.

In Magama, a health worker described that.

> Yes, we are doing the immunisation well, but there are some mothers who do not bring out their children, so we resorted to visiting, and when we do that, they will not have any excuse not to immunise their children. The truth is that most of them do not bring out their children for immunization and some leave their children for up to 7 months (Health Worker, Female Magama).

In Mallam Adama, a Community Health Worker revealed that "Some other mothers do not want to immunise their children because they believe that there may be a pin in their body, so they will decide to check with a native doctor first before coming for immunisation" (Community Health Worker, Mallam Adama).

Barriers to Childhood Healthcare Utilisation

The data presented in Table 6 summarises the major barriers faced by caregivers in accessing and utilising childhood healthcare services in the Plateau South Senatorial Zone. The findings reveal a wide range of systemic and structural barriers that negatively affect service uptake. A vast majority of respondents (96.7%) identified "Others" as significant problems, indicating a variety of underlying and often interconnected issues. These include the absence of potable water and electricity in health facilities, shortage of basic consumables, lack of well-trained and motivated personnel, insecurity, and widespread poverty, all of which compound access to quality childhood healthcare services. Additionally, long queues and extended waiting times were cited by 93.1% of respondents, suggesting that overcrowding and inefficient service delivery are prevalent issues in local health facilities. This is closely followed by the issue of drugs being out of stock, mentioned by 85.4% of participants, indicating a serious supply chain problem that undermines trust and continued use of healthcare services.

Poor transportation networks were also identified by 74.9% of respondents as a barrier. This is particularly significant in rural and hard-to-reach communities, where health facilities may be located far from residential areas and roads are often in disrepair. Similarly, the lack or absence of healthcare personnel was noted by 59.1% of participants, pointing to a critical shortage of skilled workers at the primary care level. Other prominent challenges include the high cost of drugs (56.2%) and long distance from residence to health facilities (52.3%), both of which suggest financial and geographical barriers that may discourage timely health-seeking behaviour among caregivers. Interestingly, only 32.5% of respondents mentioned the poor attitude of care providers as a major problem, implying that interpersonal relationships between caregivers and health workers may not be as significant a deterrent compared to structural and logistical challenges.

Table 6: Major Problem(s) of Using CHSs in Plateau South Senatorial Zone

Major Problem(s)	M (%)	NM (%)	Total (%
Poor transportation network	288 (74.9)	96 (25.1)	384 (100.0)
High cost of drugs	216 (56.2)	168 (43.8)	384 (100.0)
Long distance from residence	201 (52.3)	183 (47.7)	384 (100.0)
Lack/absence of personnel	227 (59.1)	157 (40.9)	384 (100.0)
Poor attitude of care providers	125 (32.5)	259 (67.5)	384 (100.0)
Drugs out-of-stock	328 (85.4)	56 (14.6)	384 (100.0)
Long queues and waiting time	358 (93.1)	26 (6.9)	384 (100.0)
Others	371 (96.7)	13 (3.3)	384 (100.0)

Qualitative data from the KIIs provide more insights into these interrelated barriers. A nurse, in a PHC lamented that "One of the biggest issues is that we often run out of essential drugs. Parents come to the clinic and leave disappointed because the medications are not available. It discourages them from returning." A community health extension worker in Gamakai Langtang South LGA also held that "We are overwhelmed. On clinic days, the queues are long and we are very few. Some mothers get tired of waiting and leave before their children are attended to. That affects coverage." Also, a facility manager in Pal said, "Our staff strength is too low for the population we serve. We also have issues with electricity and a lack of clean water. These things affect service delivery and make the environment uncomfortable for both workers and patients."

According to a village head Doemak Quan-Pan LGA, "People complain to me about the distance to the health centre. Some women have to walk for over an hour with sick children. During the rainy season, the roads are nearly impassable." A ward party chairman observed that "We've seen more people going to the health centre when outreach programs are done. But the problem is, those programs are not regular, and many cannot afford transport to go to town for healthcare." A traditional chief in Kasuwan Ali Wase LGA asserted that "There is no security in some parts. Even health workers are afraid to go out for outreach. Also, poor roads and lack of transport affect how people access health services."

The ward chairperson of a Women's Development Group in a ward in Langtang South LGA stated that "We always talk to women about going to the clinic, but they say the wait is too long and there are not enough nurses. Some of them go early in the morning and still don't get attended to until late." A local women cooperative member said that "Most of our members are poor. Even if they go to the clinic and see the nurse, they are told to buy drugs from outside. Many just go home and use herbs or wait until the child gets worse." A religious women's group leader in Fajul Langtang South LGA said, "We've helped organise health talks, but more needs to be done. If there are no drugs, no light, no water, and no transportation, the women will not go no matter what we say."

The programme officer of an NGO in Shendam LGA held that "In our last project, we found that the biggest bottleneck is logistics—transport for both health workers and community members. We tried to support some mobile clinics, but funding was limited." Another field coordinator said "We noticed that most facilities lack adequate supplies. Even if the staff are there, they don't have

the basic tools and medications. This creates distrust in the system." The monitoring and evaluation officer explained that "Our surveys show that long waiting times and poor staff motivation are a major concern. In some centres, one nurse manages the entire facility. We advocate for community health volunteers to reduce the burden." Overall, the quantitative and qualitative data underscore the multifaceted nature of barriers to childhood healthcare utilisation in the region. Addressing these issues will require integrated, community-based, and policy-driven approaches that improve service delivery, enhance infrastructure, ensure consistent drug availability, and build trust between health systems and local communities.

Table 7 below shows that the R-squared, which measures the explained variance, is 0.531. This means that 53.1% of the variation in utilisation of PHC services is explained by the joint effects of distance, cost of drugs and other consumables, situation of nearest PHC and availability of care providers. The table also showed that the cost of drugs and other consumables, including PHC services, has a negative effect on the use of PHC services. The partial regression coefficient for cost of drugs and other consumables is -0.400.

Table 7: Multiple Regression Analysis of Ever Taken Child(ren) to PHC for CHSs and Selected Determinant Factors (Independent Variables)

Dependent Variable: Ever Taken Child(ren) to PHC for CHSs

R	0.729
R Square	0.531
Adjusted R Square	0.529
Std. Error of the Estimate	0.32782

			Coefficients		
Ever taken Child(ren) to PHC for CHSs	**B**	**SE**	**Beta**	**t**	**Sig**
(Constant)	.579	.084	6.869		.000
Distance	-.031	.006	-.153	-5.56	.000
Cost of Drugs & Other Consumables	-.400	.018	-.634	-22.64	.000
Situation of Nearest PHC	.006	.012	.013	.482	.630
Availability of Care Providers	-.141	.020	-.196	-6.882	.000

Put differently, the use of PHC services will increase if the cost of drugs and other consumables decreases. This relationship was significant at <0.00001 levels. Judging from the magnitude of the t-values, the cost of drugs and other consumables has the most important influence on the use of PHC services, followed by personnel problems, namely waiting time, long queues and/or attitude of health workers. The third influence on the use of PHC services was distance problems and this is made up of transportation and distance. The regression analysis revealed that facilities-linked problems did not constitute a major deterrent to the use of PHC services, as it was not statistically significant.

Table 8: Multiple Regression Analysis of Ever Taken Child(ren) to PHC for CHSs and Selected Cultural Beliefs & Practices (Independent Variables)

Dependent Variable: Ever Taken Child(ren) to PHC for CHSs

R	0.626a
R Square	0.392
Adjusted R Square	0.387
Std. Error of the Estimate	0.37372

	Coefficients				
Ever Taken Child(ren) to PHC for CHSs	**B**	**Std. Error**	**Beta**	**t**	**Sig**
(Constant)	.109	.112		.972	.331
a.	.558	.046	.450	12.121	.000
b.	-.247	.043	-.230	-5.778	.000
c.	.126	.050	.129	2.520	.012
d.	.302	.046	.253	6.534	.000

a. ***Foods a baby under 5year should not eat in your culture
b. ***Foods a breastfeeding mother should not eat in your culture
c. ***Knowledge of households still practising such taboo
d. ***I am still practising such taboo

Table 8 shows that the R-square, which measures the explained variance, is 0.392. This means that 39.2% of the variation in access and utilisation of PHC services for CHSs is explained by the joint effects of cultural beliefs about foods a baby under 5years and a breastfeeding mother should not eat, knowledge of households and individuals still practising such food taboo. The table also showed that cultural beliefs about foods a baby under 5years should not eat has positive effect on the access and use of PHC for CHSs. The partial regression coefficient for cost of drugs and other consumables is 0.558.

Put differently, the access and use of PHC for CHSs will increase if there is widespread cultural belief that a baby under 5 years should not eat certain foods. This relationship was significant at <0.00001 levels. Judging from the magnitude of the t-values, 'I am still practising such taboo' has the second most important influence on access and use of PHCs for CHSs, followed by knowledge of households still practising such taboo. Beliefs about foods a breastfeeding mother should not eat negatively influence access and use of PHCs for CHSs. The regression analysis revealed that socio-cultural beliefs and practices do not constitute a major deterrent to access and use of PHCs for CHSs, as it was not statistically significant.

Community-Based Interventions in Similar Contexts

This study focuses on community-based healthcare insurance (CBHI) as a core intervention to improve childhood healthcare access in Plateau South. It examines awareness, participation, and

effectiveness of CBHI in reducing financial barriers, drawing insights from similar contexts to inform sustainable, community-driven health financing models in rural Nigerian settings.

Table 9: Awareness of Community-Based Healthcare Financing Schemes

Response	Frequency	Percentage (%)
Yes	69	18.0
No	315	82.0
Total	**384**	**100.0**

From Table 6 above, the majority (82.0%) were not aware of community-based healthcare financing schemes such as cooperatives or pooled contributions, while just a handful of the respondents (18.0%) were aware of community-based healthcare financing schemes, indicating limited knowledge or visibility of such programmes. According to a healthcare provider,

> Yes, however, not in this zone. When I was in the northern senatorial zone, we had a community health insurance pilot in the area about two years ago. It was supported by an NGO and allowed families to pay a small monthly fee to access basic services. But after the project ended, the initiative died off due to a lack of continuity (PHC Officer, Fajul).

A community leader (Ward Head) said

> We are hearing that some of our neighbouring communities in the other LGA (Pankshin) have tried a health cooperative system where families contributed small amounts into a community purse. It was managed by local elders and helped to pay for emergency child treatment. But trust issues affected it after some time. For us, we are also thinking of starting one.

Also, a community women's group leader held that ... “We’ve heard of such schemes, but none is currently active in our community. Most women still pay out-of-pocket, and it’s becoming too expensive for those with many children.” An NGO health program coordinator said... “In our last intervention, we facilitated discussions around community-based health insurance, but uptake was low because people lacked information and mistrusted the management process.”

Table 10: Contribution to or Benefit from Community-Based Healthcare Financing

Response	Frequency	Percentage (%)
Yes, contributed and benefited	5	1.3
Yes, contributed but not benefited	34	8.8
No, never contributed or benefited	330	85.9
Total	384	100.0

Even fewer had participated: Table 7 shows only 1.3% had both contributed to and benefited from such schemes and not in their current community, while 85.9% had neither. This suggests community-based financing is not yet a widespread or accessible strategy for reducing the cost of childhood healthcare services. KII responses further provide more insight. According to a healthcare provider (Primary Health Care Officer, Langtang South), "...the majority don't even know such options exist." A Community Leader (Village Head, Quanpan) recalled that "...we once tried to set up a local health fund where households contributed monthly. Many people were sceptical and stopped paying after a while because they didn't see immediate benefit. Right now, I'd say almost nobody contributes, and those who did before feel it was a waste." Another Health Financing Program Officer held that

> Our 2022 assessment revealed that uptake of community-based health insurance schemes was extremely low in this region. Less than 2% of the community members had both contributed and received benefits. The biggest barriers were mistrust in fund managers and lack of understanding of how the schemes work.

Table 11: Perceived Helpfulness of Community-Based Healthcare Financing

Response	Frequency	Percentage (%)
Very Helpful	7	1.8
Somewhat Helpful	61	15.9
Not Helpful	2	0.5
Not Sure	314	81.8
Total	384	100.0

When asked about the perceived helpfulness of such schemes, 81.8% were either unsure or skeptical, pointing to the need for education, transparency, and trust-building in scheme design and administration. 17.7% believed they were either "very helpful" (1.8%) or "somewhat helpful" (15.9%) (Table 8). While this reflects general support for community-based financing, the remaining 0.5% believed they are not helpful. further insights from the KIIs corroborate the data in the table. A Healthcare Provider affirmed "Very helpful—when well-managed. They reduce the financial burden on families and improve early care-seeking for children. The problem is sustainability." A Community Leader held that "They can be helpful, but the community needs strong leadership and transparency. People are more likely to participate if they trust those managing the funds." A Women Group Leader stated that "If they are regular and dependable, they help a lot. Women can go to the clinic without begging for money or selling things. But most schemes don't last long." An NGO Representative hinted that "We see strong evidence that they work in similar low-income communities. They ease the burden, especially where government coverage is limited. But technical and financial support is needed to make them sustainable."

Optimising Community-Based Strategies for Sustainability

This section presents qualitative data gathered on suggestions of what government can or should do to improve utilization of CHSs in Southern Senatorial Zone. Respondents were asked to suggest

what the government can or should do towards improving the use of CHSs in open-ended questions. Their responses as summarized below show that Government has a lot to do to improve use of CHSs in the study location. The study participants noted that supporting infrastructures such regular power supply, water, access roads and others to make the PHCs functional are not available. Their suggestions are summed in the words of a mother of four (graduate) who suggested that;

> Power is at the center of the challenges at our PHC and other facilities around. You cannot take your child there at night for any emergency because of lack of electricity. Government can help by extending the electricity project from Mabudi (LGC Headquarter) to our community (A mother of four, Tertiary education, Gamakai).

A community leader in Pal also reiterated that

> You see, the road to that PHC is not good and look at our source of water –so dirty and contaminated. Most of the time, we (the community) try to repair the road, but it is usually washed away during the rains. That abandoned water project you can see there was started by an NGO in collaboration with government but up till now, it was not completed. We were going there to fetch water before but now all the equipment is broken down. Government should help by providing these things (Community Youth Leader, Pal)

Establishment of more functional health facilities with children-specific professionals and equipment was also advocated by the respondents. A community religious leader in Mikang held that:

> I have discussed this issue of establishing a clinic for this community with our leaders at the Church headquarters and there is hope because they told me, they will look into it. But you see, it is taking too long and I quite understand because they seemed to be overwhelmed. That is why I am suggesting that the government should come in to help in establishing these facilities here (Christian Clergy)

Improving security to enable health workers to render services and users to access those services was suggested by the study participants. Although most respondents held that security is realm of government and community arrangements to support governmental security agencies. A community leader in Magama held that.

> Even if the best facility is located here, and there is insecurity as we have now, how can it operate and provide these services you are talking about? At the community level, yes, we are working with our hunters and some vigilante groups to complement the police. But as you can see, the police personnel are grossly inadequate. We need a police station here, and it is the government that can help us in that regard (Opinion Leader, Magama).

Another recurring suggestion by the study participants is on the empowerment of households and support for agriculture. Peasant farming and poverty in general are considered as challenges to using CHSs. The respondents suggest that government should help by providing loans, agricultural

inputs—improved seeds, fertilizer, machinery etc—to households to boost their income and in turn improve capacity to afford and use needed CHSs. In Magama, a grandmother and women's leader posited that

> Many of us here in this community do not have the money (₦500.00) to pay for the cards and buy the drugs. I suggest the government should help us. Thank God our land can produce well with little inputs. So, if the government can support us, it will go a long way. Yes, they can give us loans and other facilities to help our farming. If we have an increased harvest, I think all these complaints will reduce (Women Religious Leader, Magama).

Health workers and community leaders also suggested training and redeployment of more health workers to the area for consistent provision of CHSs. Across all LGCs, the challenge of inadequate staff is glaring. There are some facilities that are not functional due to a lack of staff. A CHEW in Pal suggested that.

> Government at the state level should help by employing, training and posting healthcare workers to even government-owned PHCs. I don't know why training for health workers has become so expensive. We need more workers. There are several poor young people who want to be doctors, but will they even get admitted into those programmes? And those who manage to get admission are not coping due to the high training cost. Federal Government should make health workers' training free and competitive so that as many as are interested and qualify can be enlisted and trained and deploy to our rural communities (Female CHEW, Pal).

Respondents were asked to suggest what NGOs, CSOs, and FBOs can or should do towards improving the availability and use of CHSs. Their responses as summarized below. The study participants noted that supporting infrastructures, such as regular power supply, water, access roads and others, to make the PHCs functional are not available. Their suggestions are summed in the words of a mother of four (graduate) who suggested that;

> These organizations (NGOs, FBOs and CSOs) should help by providing power supplying equipment like Solar power installations. Power is at the centre of the challenges at our PHC and other facilities around. You cannot take your child there at night for any emergency because of lack of electricity (A mother of four, Tertiary education, Gamakai).

Community leaders and individuals can also engage in a series of actions to improve the utilisation of CHSs. The study participants noted fading awareness of the EBF in particular and the absence of any form of health insurance scheme, in addition to a lack of supporting infrastructures and other challenges. Their suggestions are presented below. One commonly suggested action community leaders at various levels and individuals, especially the older members of the community across LGCs, can and should take is creating and recreating awareness, especially among younger parents. In the words of a grandmother in Gamakai,

> UNICEF sent people here several years ago to enlighten our people on all these issues (EBF, ANC attendance and others). The information is still very useful and I know our older

> parents can teach the younger ones. You see we cannot and should not be waiting for UNISEF because they have tried and do their part. We need to continue to encourage our younger people (Grandmother & Retired health worker, Gamakai).

A youth leader in Mallam Adama suggested that.

> Our community leaders at all levels can increase awareness campaigns on issues around IMSs, ANC attendance, EBF and others. We can remind our people through announcements in Churches, Mosques and markets. You know the challenges are too many and people can easily forget, especially when there are more pressing immediate needs (Male Youth Leader, Mallam Adama).

One critical suggestion by the community leaders and some study participants towards a health financing option to enable them to access services for their children is cooperation towards forming a community health insurance scheme. In the words of a religious leader in Gamaki

> It is not easy at all. I think if we can cooperate and form a community health insurance scheme, it will help in mobilising funds for the prompt use of CHSs. As a community, we can look for professional health workers and financial experts to study what is been done in that regard in other communities around the country and advise on how we can start our own (Church Leader, Gamakai).

DISCUSSION OF FINDINGS

The utilization of delivery services at Primary Healthcare Centres (PHCs) in the Southern Senatorial Zone of Plateau State remains remarkably low. A significant proportion of mothers do not attend antenatal care (ANC) and give birth at home. This pattern aligns with findings by Ononokpono and Odimegwu (2017), who observed regional disparities in maternal healthcare utilization, noting that mothers from Northern Nigeria are less likely to use modern healthcare facilities. In Zamfara State, sociocultural constraints—such as the preference to preserve female modesty over medical intervention—have resulted in avoidable maternal deaths, underscoring the strong influence of cultural and religious beliefs on healthcare decisions. Despite improvements in access to insecticide-treated mosquito nets (ITMNs), with a 14.4% increase from the 2018 NDHS-reported 45.5% state-wide average, utilization of integrated management strategies (IMSs) for child health remains suboptimal. Vaccination dropouts are common, primarily due to caregivers' fear of harmful side effects and the need to prioritize farming or economic survival. These findings validate the relevance of the Health Belief Model, which posits that health behaviors are influenced by perceived susceptibility and barriers, and the Culture-Bound Theory, which emphasizes the embeddedness of health behaviors within sociocultural contexts. Recent studies such as Igbokwe et al. (2024) in Benue State also found that sociocultural beliefs remained key predictors of maternal and child health service utilization. Interestingly, the findings diverge from studies in Southern Nigeria (e.g., Ngozi, Akwataghibe, Ogunsola et al., 2019; Otu, 2018), where increased access has led to higher levels of healthcare utilization. This inconsistency highlights the importance of contextual dynamics, such as local belief systems and livelihood demands, in shaping health service engagement.

Exclusive breastfeeding (EBF) awareness is widespread, largely due to prior UNICEF campaigns. However, sustained practice is low. Unlike studies in Kenya (Mohamed, Ochola, & Owino, 2020) and Nigeria (Ejie et al., 2021) that attribute low EBF to cultural taboos, the Plateau study identifies economic pressures—such as women's need to return to farming or menial work—as primary deterrents. This insight supports Bronfenbrenner's Ecological Systems Theory, which underscores the interaction between individual behaviors and broader socio-economic systems. Cultural beliefs remain prevalent but are not statistically significant as a sole determinant of PHC delivery service use. For example, while some mothers believe in spiritual causes of illness and follow food taboos for children and lactating mothers, many are concurrently aware of recommended health practices. This nuanced relationship aligns with Bowlby's Attachment Theory, which emphasizes early nurturing practices, yet is moderated by economic and infrastructural constraints.

Furthermore, structural inadequacies—such as lack of potable water, electricity, consumables, skilled personnel, and transportation—present major barriers. Insecurity and poverty compound these issues. These systemic weaknesses mirror the findings of Ntoimo et al. (2019), who identified accessibility, perceived quality of care, financial barriers, and lack of social support as key deterrents to PHC utilization in rural Edo State. A similar pattern was reported by a 2023 study in Abuja (Adebayo et al., 2023), which emphasized that even when services are available, poor infrastructure and health system inefficiencies hinder effective utilization.

The findings also highlight the limited awareness, participation, and perceived benefit of community-based healthcare financing schemes (CBHIs) in the Southern Senatorial Zone. Only 18% of respondents were aware of such schemes, and fewer than 2% had both contributed to and benefited from them. This suggests CBHIs are not yet a viable mechanism for reducing financial barriers to childhood healthcare in this context. Qualitative insights revealed that trust deficits, lack of continuity, and inadequate awareness are major impediments. For example, key informants recalled failed initiatives due to poor management or short-term external funding. Although 17.7% of respondents found CBHI schemes helpful, the overwhelming uncertainty (81.8%) suggests a significant trust and information gap.

These findings resonate with Andersen's Behavioural Model, where enabling resources (e.g., financing mechanisms) must be both accessible and perceived as trustworthy. They also highlight the need for sustained community engagement, transparency, and capacity-building to make CBHI a reliable pillar of rural health financing. These observations align with findings by Nankabirwa et al. (2024) in Uganda, who demonstrated that trust and peer-led models significantly enhance community health participation. Similarly, ADVISER's AI-enabled outreach in Oyo State improved healthcare engagement through better targeting and trust-building (Okonkwo et al., 2023). This study contributes to the existing literature by offering a context-specific understanding of how trust, health beliefs, cultural norms, and structural challenges interact in shaping healthcare utilization. It confirms that while awareness is growing, practical and sociocultural realities still dictate access and use. The study's uniqueness lies in revealing the growing importance of economic roles among rural women and localized beliefs in Plateau State, suggesting the need for tailored interventions that integrate community engagement, cultural respect, and structural improvements.

Conclusion

This study has underscored the importance of community-based solutions in addressing the persistent underutilisation of childhood healthcare services in the Southern Senatorial Zone, Plateau State. Despite the presence of Primary Healthcare Centres (PHCs), utilisation remains hindered by infrastructural deficits, poverty, limited health financing options, and inadequate human resources. Community-based interventions—such as CHW outreach, health education, and involvement of traditional and faith-based leaders—have shown potential but require stronger support, coordination, and integration into formal health systems. These findings affirm key theoretical frameworks used in the study. The Health Belief Model and Culture-Bound Theory help explain caregivers' reluctance to access PHCs due to perceived side effects of immunisation and cultural misconceptions. Bronfenbrenner's Ecological Systems Theory highlights the influence of wider economic and policy systems, particularly the pressures that push mothers back into labour rather than sustain exclusive breastfeeding. Andersen's Behavioral Model further clarifies why awareness alone does not guarantee utilisation—without enabling factors such as financing, trust, and accessible services, uptake remains poor.

This study contributes new knowledge to the field of community health systems by revealing how localised economic pressures and fragmented trust structures influence the implementation and uptake of community-based interventions, particularly CBHIs. It offers evidence that while these schemes are theoretically effective, real-world challenges—especially trust, awareness, and continuity—undermine their potential. However, the study did not explore the specific roles of community leaders, youth groups, and informal caregivers in shaping healthcare access. Nor did it assess digital or technological innovations that might support community health financing or outreach. Future research should examine these aspects more closely and pilot integrated, trust-building community health financing models tailored to rural dynamics. Longitudinal studies may also help track changes over time as community-based strategies are scaled or restructured.

Recommendations

i. Infrastructure and Resource Support: The Government should prioritise the provision of basic infrastructure such as electricity, clean water, and accessible roads around PHC facilities. Community members consistently cited these as critical enablers for effective utilisation of child health services.
ii. Health Workforce and Financing Reform: There is a pressing need for the government to employ, train, and deploy more healthcare workers to rural areas. Reducing the cost of training and introducing community-based health insurance schemes will enhance local capacity to afford and access services.
iii. Community and Stakeholder Engagement: Community leaders, NGOs, and faith-based organisations should be empowered to drive health awareness, encourage preventive care practices like exclusive breastfeeding, and facilitate community-led insurance models. Local efforts to sustain awareness campaigns and promote peer education can ensure continuous service uptake even when external support is limited.

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