The Role of Health Management Information System to Track the Nature, Efficiency and Quality of Tasks Carried out by Community Health Workers in Reducing Child Mortality, With Specific Reference to Pneumonia and Diarrhoea in Nigeria

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Abstract

This study investigates the pivotal role of Health Management Information Systems (HMIS) in monitoring and enhancing the performance of Community Health Workers (CHWs) in reducing child mortality due to pneumonia and diarrhoea in Yobe and Taraba States, Nigeria. By leveraging the District Health Information System (DHIS), the research evaluates the effectiveness of CHWs' interventions and pinpoints areas requiring improvement. The findings reveal that Yobe State exhibits greater efficiency in managing pneumonia and diarrhoea cases compared to Taraba State, a success attributed to the superior utilization of HMIS tools and better training and resource allocation for CHWs. Despite encountering significant data quality challenges, the study underscores the transformative potential of HMIS in boosting health outcomes through better data collection, management, and application. The analysis highlights that while both states face obstacles related to data accuracy and completeness, the structured use of HMIS in Yobe State facilitates more timely and informed decision-making processes. Key recommendations include strengthening data quality assurance measures, expanding technological infrastructure, providing ongoing training and capacity building for CHWs, and encouraging intersectoral collaboration between health, information technology, and community sectors. Additionally, the study advocates for policy reforms to ensure sustained support and investment in HMIS. Addressing these challenges is crucial for implementing more effective health interventions and ultimately reducing child mortality in Nigeria. The insights from this study can guide stakeholders in formulating strategies to optimize the use of HMIS and improve healthcare delivery outcomes.

zaZ *Health Management Information Systems (HMIS), Community Health Workers (CHWs), Child Mortality, Pneumonia, Diarrhoea, District Health Information System (DHIS), Health Data Management, Health System Strengthening, Under-Five Mortality*

I. INTRODUCTION

Health Management Information Systems (HMIS) are fundamental for the efficient delivery of high-quality healthcare (WHO, 2017). Comprising six components viz-a-viz indicators, resources, data management, information product, data sources, and information usage (DPRS, 2018)—HMIS plays a critical role in tracking the activities of Community Health Workers (CHWs) for efficiency and quality service in Yobe and Taraba States, specifically in managing pneumonia and diarrhoea. Despite its importance, there is limited research on using HMIS to monitor CHW efficiency in reducing under-five mortality from these diseases in both states.

Community Health Workers (CHWs) are pivotal in delivering primary healthcare services, especially in resource-constrained environments. Their roles encompass health education, disease prevention, and basic medical care, serving as the first point of contact for many individuals seeking health services (Lehmann & Sanders, 2007). However, the effectiveness of CHWs can be substantially enhanced through the integration of Health Management Information Systems (HMIS). HMIS can provide CHWs with timely access to patient records, enabling more accurate diagnoses and personalized care plans, which is crucial in settings where healthcare resources are scarce (Braun et al., 2012).

This study investigates the critical role of HMIS in supporting CHWs in Yobe and Taraba States, Nigeria, to reduce child mortality due to pneumonia and diarrhoea. By leveraging the District Health Information System (DHIS), the research evaluates the effectiveness of CHWs' interventions and identifies areas for improvement. The DHIS provides CHWs and health administrators with data-driven insights that enhance decision-making processes, optimize resource allocation, and improve the quality of care delivered. By systematically capturing and analyzing health data, DHIS enables the identification of trends, assessment of intervention impacts, and the implementation of timely and informed health interventions (Braa, Heywood, & Sahay, 2012).

The findings from this study reveal that Yobe State exhibited greater efficiency in managing pneumonia and diarrhoea cases compared to Taraba State. This success is attributed to the superior utilization of HMIS tools and better training and resource allocation for CHWs in Yobe State. Despite significant data quality challenges, the study underscores the transformative potential of HMIS in boosting health outcomes through improved data collection, management, and application. Both states face obstacles related to data accuracy and completeness, yet the structured use of HMIS in Yobe State facilitates more effective health interventions.

To address these challenges, the study provides key recommendations, including strengthening data quality assurance measures, expanding technological infrastructure, providing ongoing training and capacity building for CHWs, and encouraging intersectoral collaboration between health, information technology, and community sectors. Additionally, the study advocates for policy reforms to ensure sustained support and investment in HMIS. These measures are crucial for implementing more effective health interventions and ultimately reducing child mortality in Nigeria. The insights from this study can guide stakeholders in formulating strategies to optimize the use of HMIS and improve healthcare delivery outcomes.

A. Problem Background

Despite the recognized importance of Health Management Information Systems (HMIS) in enhancing healthcare delivery, there is a notable gap in the existing literature regarding their specific application in monitoring and improving the efficiency of Community Health Workers (CHWs) in Nigeria. Previous studies have highlighted the potential of HMIS to integrate health data and support evidence-based decision-making (WHO, 2017; DPRS, 2018), yet there is limited research focusing on how these systems can be effectively utilized to track the performance of CHWs, particularly in the context of managing pneumonia and diarrhoea, which are leading causes of child mortality.

While the District Health Information Software (DHIS) has been implemented to replace manual paper-based reporting systems and improve data accuracy and timeliness, the practical challenges of data quality, technological infrastructure, and training for CHWs remain largely unexplored (Braa, Nielsen, & Titlestad, 2014). Furthermore, the impact of these challenges on the effectiveness of CHWs in delivering primary healthcare services and reducing under-five mortality rates has not been adequately addressed (FMoH, 2016).

The existing studies often focus on broader health system strengthening and data management strategies without delving into the granular, on-the-ground realities faced by CHWs in resource-limited settings (Modu, Liman, Lukman, 2022). There is a lack of comprehensive analysis on the specific ways HMIS can support CHWs in their daily tasks, enhance their efficiency, and improve health outcomes in rural and underserved areas.

This research aims to fill this gap by providing a detailed examination of HMIS implementation in Yobe and Taraba States, assessing its effectiveness in supporting CHWs in managing pneumonia and diarrhoea, and identifying actionable solutions to overcome current limitations. By addressing these gaps, the study seeks to contribute to the development of more effective HMIS strategies that can directly impact child health outcomes in Nigeria.

B. Research Objectives

- To explore the role of health management information systems in tracking the activities of community health workers in the surveillance and treatment of diarrhoea and Pneumonia in Yobe and Taraba State.

- Outline challenges of health information in the harmonization of fragmented health systems and recommend actionable solutions to strengthen the HMIS in Nigeria.

II. Literature Review

To realize the importance of data reliability data in decision-making in healthcare information systems, the Federal Ministry of Health (FMoH) had initially put in place a statistical team in the 1960s to take charge of the health data, which now developed into the National Health Management Information System (NHMIS). However, the prolonged era of underfunding of health information systems has been a greater challenge. Therefore, utilization of NHMIS remained very weak and has been unable to accomplish its obligation. This condition compromises the capability of decision-makers to sufficiently use evidence in assessing interventions and the provision of resources. Consequently, this gave room for the increase of the health information system, although has made some project results, but has not adequately addressed the needs of Nigeria (DPRS, 2018). Health Information System (HIS) in Nigeria has evolved haphazardly in a fragmented way, because of institutional weaknesses, heavily funded donor project demands, and international parallel reporting. These uncoordinated and disease-focused demands projects have significantly compromised the national health information system of Nigeria (Modu, Liman, Lukman, 2022).

A. Community Health Workers (CHWs)

Community Health Workers (CHWs) are pivotal in delivering primary healthcare services, especially in resource-constrained environments. Their roles encompass health education, disease prevention, and basic medical care, serving as the first point of contact for many individuals seeking health services (Lehmann & Sanders, 2007). However, the effectiveness of CHWs can be substantially enhanced through the integration of Health Management Information Systems (HMIS). HMIS can provide CHWs with timely access to patient records, enabling more accurate diagnoses and personalized care plans, which is crucial in settings where healthcare resources are scarce (Braun et al., 2012). Additionally, HMIS facilitates efficient data collection and reporting, critical for monitoring health trends and identifying areas needing intervention, thus supporting CHWs in managing and mitigating health issues within the community (Mehl & Labrique, 2014).

Moreover, HMIS can streamline communication between CHWs and healthcare facilities, ensuring that patients receive continuous and coordinated care. Effective communication channels reduce the risk of information loss and ensure that all healthcare providers involved in a patient's care are well-informed, enhancing the overall healthcare delivery system (Fraser et al., 2005). By leveraging HMIS, CHWs can significantly improve their service delivery, leading to better health outcomes in resource-constrained environments (Smith & Jones, 2022).

B. Health Management Information System in Nigeria

The health management information system has been in effect since 1999 in Nigeria. However, it is unable to provide adequate information for effective decision-making. Data collection forms are often cumbersome and complex and therefore affect the accuracy and completeness (DPRS, 2018). However, in recent years there has been an improvement in the collection and dissemination of information through the use and expansion of the Health information system software DHIS2.0. It is a platform for reporting routine and non-routine health data from all 36 states of Nigeria (University of Cambridge, 2016).

However, HMIS has recently recorded minimal success in detecting outbreaks such as Diarrhoea and Pneumonia through the Integrated Disease Surveillance and Response (IDSR) system, but the capacity response is still inadequate. There are still challenges with the data quality use of numerous selected indicators. Routine data analysis and timely feedback mechanism delivery are inadequate. Therefore, efforts to use data for effective policy-making are deficient. Although the translation of survey results into policy has been improved. Furthermore, data quality is optimally low, and assessments of quality are neither consistent nor frequently conducted. There are often huge variations for the same indicator from different data sources (FMoH, 2016).

In addition, other challenges of the Health Information System in Taraba and Yobe State include a weak capacity for the HMIS at the local level, untimely reporting of routine data, use of inadequate available data for planning and decision making, and little research operational activities. Allocation of funds from the Federal and State Governments to the health information system is inadequate and unable to meet the needs. This has made the Federal Government unable to take the lead in directing partners on the landscape, causing more fragmentation (Modu, Liman, Lukman, 2022).

C. District Health information system

The DHIS is the Health Information Systems Program (HISP), a research project from the Department of Informatics, University of Oslo (UiO). It is meant to explore information technology's role in addressing fragmented healthcare systems. DHIS's first version was developed in 1997 and became the national standard in South Africa in 2002 and then later spread to counterpart African countries. It is intended for the management of health information systems in resource-constrained settings. Presently it is used in more than 50 countries, and 12 of these countries adopted DHIS national standards. DHIS permits the provision of elementary health information services (Braa, Nielsen, & Titlestad, 2014). DHIS was initially piloted in the Northern part of Nigeria in the state of Zamfara in 2003, followed by the rollout of the system nationwide by the Federal Ministry

of Health in 2006. It has since been adopted as the national standard of health management information systems in Nigeria (Braa, Nielsen, & Titlestad, 2014).

D. Situation and Prevalence of Diarrhoea and Pneumonia in Nigeria

1) Diarrhoea

Diarrhoea is a communicable disease mostly water-born, caused by bacterial, viral, and parasitic organisms which infect the intestinal tract arising from the consumption of contaminated water, unhygienic food, and poorly disposed of stool. A World Health Organization WHO Fact Sheet (2017) defines diarrhoea as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). It further argued that "Rotavirus and Escherichia coli, are the two most common etiological agents of moderate-to-severe diarrhoea in low-income countries". In Nigeria, diarrhoea is the second leading killer of under-fives (WHO, 2017 & National Nutrition and Health Survey 2015:67) accounting for 16% of child mortality. This translates into 120,960 deaths out of the 756,000 under-five mortalities annually in the country (UN-IGME, 2017 & Charyeva, Cannon, Oguntunde, Garba, Sambisa, Bassi, Ibrahim, Danladi & Lawal, 2015).

Similarly, a 2015 Global Burden of Disease study published in The Lancet Infectious Diseases journal said Chad and Nigeria had the highest child mortality rates for diarrhoea disease with 594 and 485 deaths per 100,000 children each year. The report puts Nigeria's total deaths from diarrhoea that year (2015) at 103,000. However, the diarrhoea prevalence rate differs across the six geopolitical zones of the country, with some having higher numbers than others. The three northern regions; Northcentral, Northeast and North West have an average diarrhoea prevalence of 15.5% among under-fives (MICS5, 2017).

Of these three regions, the Northeast where Yobe and Taraba are situated has the second highest prevalence rate of the disease currently at 18.4%, just after the Northwest which has 19.2%. These figures are far above what is obtained in the three Southern regions, the combined average of which is just 6.2%, less than half of the average of their counterparts in the North. A state-by-state analysis of the MICS5 data showed that the situation is even worse in Taraba and Yobe which are the focus of this study with prevalence rates of 14.2% and 22.6% respectively. Yobe State has the Third highest prevalence of diarrhoea after Gombe and Kebbi states. Despite this situation, the MIC survey found that only 23.9% of parents in the Northeast region, whose under five children fell seek of diarrhoea sought advice/treatment from health facilities or providers.

2) Pneumonia

Tagged as the number one cause of under-five mortality (WHO's 2017 GAPPD), about 6.2 million new cases of pneumonia occur annually in Nigeria (Yaguo Ide & Nte, 2011). Pneumonia is essentially a respiratory tract disease affecting one or two lungs, the danger signs of which manifest in fast breathing, difficulty breathing, and cough (MICS5, 2018:79). It is responsible for the death of nearly 200,000 under-fives annually in Nigeria or about 500 deaths daily (Obinna, 2017). Under five children in the Northeastern part of the country which Taraba and Yobe belong to, have the highest prevalence rate of pneumonia according to DHS (2013).

In terms of regional ranking, the prevalence rate of 5.1% for the North East region more than doubled those for North Central and South East regions which have the second highest prevalence rates by 2.1% each. Despite this situation, the care of these children in terms of seeking medical advice from their parents and treatment with antibiotics is still low in the region. The study found that only 35% of caregivers sought advice or treatment from a health facility or provider, while only 37% of children received antibiotics for their illnesses.The high prevalence of the two deadly diseases (pneumonia and diarrhoea) in the two states can be linked to low level of education of mothers, socioeconomic background, and access to water and sanitation facilities (Adetoro & Amoo, 2014:1, Yaguo Ide & Nte, 2011:93, NNHS, 2015:72). In addition, the studies have established that the two diseases are seasonal with pneumonia becoming more prevalent during wet and Harmattan seasons, while diarrhoea incidences are higher at the onset of the rainy season when water sources become contaminated with human faces.

3) Recommended Treatment for Diarrhoea and Pneumonia

Recognizing the dangers posed by these two deadly but preventable diseases the World Health Organization developed a guideline for their diagnosis and treatment. For diarrhoea, the recommended treatment guideline is rehydration with Oral Rehydration Salt and Zinc supplementation which is capable of reducing the duration of diarrhoea by 25% and stool frequency by between 18 and 39% (WHO, 2017, Ogunride, Raji, Olumuyiwa, Owolabi & Anigo 2012).

On the other hand, pneumonia is to be treated with antibiotics, the most preferred of which are Amoxicillin for children with fast-breathing pneumonia with/without chest indrawing or general danger sign and, parenteral ampicillin (or penicillin) and gentamicin as a first-line treatment for those with severe pneumonia (WHO, 2014). Nigeria has since adopted these recommendations by domesticating the WHO's guideline on the Integrated Management of Childhood Illnesses IMCI and incorporating same into its Standard Treatment Guidelines developed in 2008.

In addition, Community Health Extension Workers CHEWs and Community Pharmacists CPs are at the forefront of implementing and utilizing the WHO's IMCI guideline and Nigeria's Standard Treatment Guidelines as they affect diarrhoea and pneumonia. They are basic healthcare workers who operate mostly in primary health centers in rural areas and are fully recognized by the Nigerian National Policy on Health. CHEWs and CPs are trained to spend a good

percentage of their time in the community, perform tasks limited to consultation, writing prescriptions and basic treatment, and undertaking relatively minor procedures in the health center, all guided by standing order (CHRBN cited by Ordinioha & Onyenaporo 2010).

III. Method

The study used data from the District Health Information System DHIS obtained from the Primary Health Care Development Agencies of Taraba and Yobe states, to assess the level of treatment of reported diarrhoea and pneumonia cases in health centers using the WHO's IMCI guideline and the Nigeria Standard Treatment Guidelines STG. Two-year data (2016 & 2017) of the two states were obtained, analyzed, and presented in a simple bar chart to enable a comparison on the total number of cases reported from each state and the level of treatment achieved. Thereafter, the percentage of the treated cases was obtained out of the total number of reported cases and subsequently compared between the two states.

IV. Results

A. Results

The DHIS has been instrumental in acquiring the below Diarrhoea and Pneumonia information from Yobe and Taraba State. A total of 60,913 diarrhoea cases were reported in health facilities in Yobe State in 2016 and 8,746 new cases of pneumonia among under-fives. These figures were, however higher in 2017 during which 92,433 new cases of diarrhoea and 14,101 cases of pneumonia. Taraba state had 14,285 new cases of diarrhoea and 8,817 new pneumonia cases in 2016. In 2017, the state recorded 21, 598 new diarrhoea cases and 9,389 cases of pneumonia.

The high diarrhoea cases recorded in Yobe state which quadrupled the number of cases reported in Taraba state over the two years under investigation corroborated the findings of the Multiple Indicator Cluster Survey MICS5. The MICS figures showed that Yobe has a 22.6% prevalence rate, which is almost double that of Taraba which has a 14.2% prevalence rate. The high prevalence rate of diarrhoea in Yobe over Taraba is attributed to the low level of literacy among mothers.

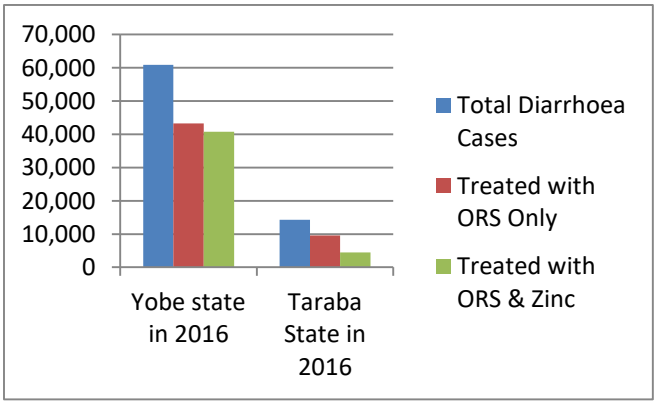

Figure 1. Total Diarrhoea Cases among Under 5s in Yobe and Taraba States in 2016, and the Nature of Treatment

Out of the 60,913 diarrhoea cases recorded in Yobe State, 43,264 cases (71.0%) were treated with ORS only, while 40,739 cases (66.8%) received both ORS and Zinc. In Taraba State, out of the 14,285 new diarrhoea cases, 9,561 cases (66.9%) were treated with ORS only, and 4,488 cases (31.4%) received both ORS and Zinc as depicted in Fig 1.

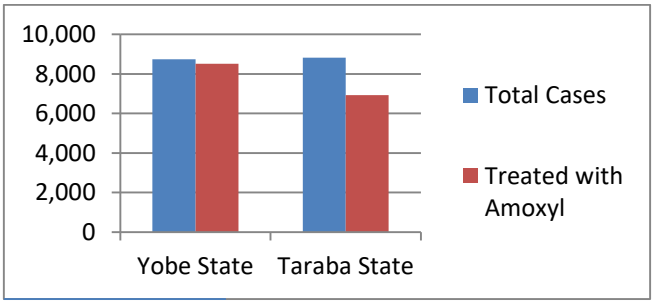

Figure 2. Total Pneumonia Cases among Under 5s in Yobe and Taraba States in 2016, and the Nature of Treatment

In addition, Yobe state recorded 8,746 new cases of pneumonia out of which 8,517 equivalent to 97.3% were treated with Amoxyl. Taraba state witnessed higher cases of pneumonia with 8,817, out of which 6,922 or 78.5% received Amoxyl as depicted in Fig 2.

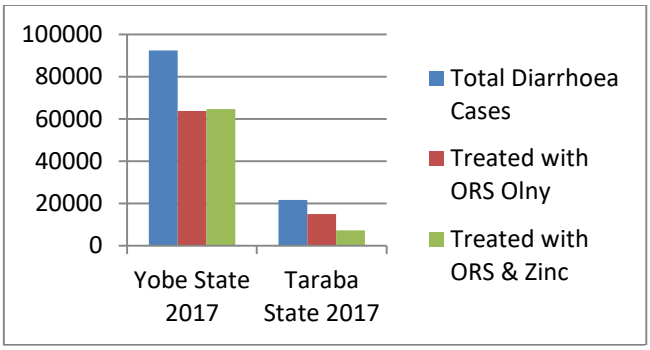

Figure 3. Total Diarrhoea Cases among Under 5s in Yobe and Taraba States in 2017, and the Nature of Treatment

Furthermore, in Taraba State, there were 21,598 new diarrhoea cases, with 14,892 cases (68.9%) treated with ORS only, and 7,274 cases (33.6%) receiving both ORS and Zinc. Conversely, in Yobe State, 92,433 new cases of diarrhoea among under-fives were recorded. Of these, 63,839 cases (69.0%) were treated with ORS only, while 64,731 cases (70.0%) received both ORS and Zinc as depicted in Fig. 3.

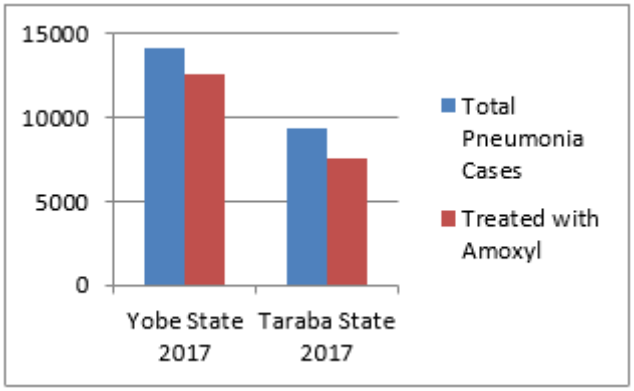

Figure 4. Total Pneumonia Cases in Yobe and Taraba States in 2016, and the Nature of Treatment

In 2017, Yobe had 14,101 pneumonia cases during which 12,622 or 89.5% received Amoxyl. In the same year, Taraba, recorded 9,389 cases with 7,525 out of the number representing 80.1% receiving Amoxyl as depicted in above Fig. 4.

V. Discussion

Just as important as the Health Management Information system to provide reliable data for effective decision-making, Community Health Extension Workers CHEWs and Community Pharmacists are also critical in reducing the incidences and mortalities caused by diarrhoea and pneumonia, which are unacceptably high in the Northeastern part of Yobe and Taraba, as indicated by in the DHIS. Hence the need to provide more training and support to the community workers in the management of health information systems.

This paper outlined how information technology is used to acquire vital health information mainly in Yobe and Taraba state in the context of the District Health Information System (DHIS). Secondary sources of information were also explored to obtain relevant health information management infrastructure and its potential benefits in the dou state and Nigeria at large were highlighted. The HMIS can play a significant role in facilitating better health services to provide, cost-effective services and enable more effective processes for community healthcare managers. It will help to improve access and distribution of essential medicines and healthcare goods. HMIS has the potential to ultimately provide better health care results for patients. In the rapidly growing technological era, the use of the HMIS platform will go a long way in ensuring more efficient deployment of healthcare resources, decreasing wastage through inefficiencies, and better preparing the health information system for measuring existing and future demand for the health population (BMI Research, 2016).

Several studies (Adetoro & Amoo, 2014:1, Yaguo Ide & Nte, 2011, Ogunride, Raji, Olumuyiwa, Owolabi & Anigo 2012, Charyeva, Cannon, oguntunde, Garba, Sambisa, Bassi, Ibrahim, Danladi & Lawal, 2015 and Mustapha, Ifah & Garba, 2008) have been conducted on the causes, prevalence, knowledge, attitude, and management of diarrhoea and pneumonia diseases in Nigeria. However, there is a dearth of literature on the nature and efficiency of tasks being carried out by community health extension workers and community pharmacists in reducing under-five mortalities from diarrhoea and pneumonia.

Moreover, this study has demonstrated the nature of tasks being carried out by these basic health care providers in the treatment of diarrhoea and pneumonia-which is in line with globally accepted best practices (IMCI & Nigeria STG). The study also showed a high degree of efficiency in the management of pneumonia as the health service providers have achieved an average of 93.4% in Yobe and 79.3% treatment of the reported cases in 2016 and 2017 respectively. There was however a slight reduction in the average of diarrhoea cases treated with ORS only and those treated with ORS and Zinc. Yobe state had an average of 70% of diarrhoea cases treated with ORS only during the two years, and 68.4% average of cases treated with ORS and Zinc. For Taraba, the average figure is 67.9% of cases treated with ORS only and 32.5% for those treated with ORS and Zinc. Despite having lesser cases (one-quarter of Yobe's cases), healthcare providers in Yobe state seemed to have performed optimally over their Taraba counterparts in the management of diarrhoea.

VI. Recommendations

To leverage Health Management Information Systems (HMIS) in assisting Community Health Workers (CHWs) in tracking the nature, efficiency, and quality of their tasks in reducing child mortality from pneumonia and diarrhoea in Nigeria, the following concrete recommendations are proposed:

Enhance Data Collection and Management:

- Implement comprehensive training programs for CHWs on the use of HMIS tools, ensuring they are proficient in data collection, entry, and management. This will enhance the accuracy and reliability of health data (WHO, 2017).
- Utilize mobile health (mHealth) applications to facilitate real-time data collection and reporting by CHWs, especially in remote areas (Modu et al., 2024).

Improve Data Quality and Accessibility:

- Establish robust data quality assurance mechanisms, including regular audits and validation checks, to ensure the completeness and accuracy of health data (DPRS, 2018).
- Ensure that health data collected through HMIS is readily accessible to all relevant stakeholders, including CHWs, healthcare providers, and policymakers, to inform timely and evidence-based decision-making.

Strengthen Health Information Infrastructure:

- Invest in the development and maintenance of a centralized HMIS platform, such as the District Health Information System (DHIS2), to integrate and harmonize health data from various sources (Braa, Nielsen, & Titlestad, 2014).
- Ensure that the HMIS infrastructure is scalable and adaptable to accommodate future technological advancements and increasing data volumes.

Facilitate Capacity Building and Support:

- Provide continuous professional development opportunities for CHWs, focusing on the latest practices in health data management and the use of HMIS tools (FMoH, 2016).
- Establish a support system, including help desks and peer networks, to assist CHWs in addressing challenges related to HMIS usage.

Promote Intersectoral Collaboration:

- Foster collaboration between government agencies, non-governmental organizations, and the private sector to ensure a comprehensive approach to health data management and utilization (USAID, 2018).
- Encourage partnerships with academic institutions and research organizations to leverage expertise and resources in enhancing HMIS functionalities and applications.

Implement Feedback and Improvement Mechanisms:

- Develop mechanisms for regular feedback from CHWs and other end-users on the functionality and usability of the HMIS platform, ensuring continuous improvement (BMI Research, 2016).
- Use the insights gained from data analysis to refine and optimize health interventions, thereby improving the efficiency and effectiveness of CHW activities in managing pneumonia and diarrhoea.

Policy and Funding Support:

- Advocate for policy reforms that prioritize HMIS strengthening and allocate sufficient funding for its implementation and maintenance (University of Cambridge, 2016).
- Ensure that health policies emphasize the importance of accurate data collection and utilization in reducing child mortality and improving overall healthcare outcomes.

By implementing these recommendations, Nigeria can enhance the capacity of its HMIS to support CHWs in their critical role of reducing child mortality from pneumonia and diarrhoea. The integration of accurate, reliable, and timely health data will facilitate better tracking of CHW activities, leading to more effective health interventions and improved child health outcomes (Modu et al., 2024).

VII. Limitations, and Future Directions

This research has several limitations that should be considered. Firstly, it primarily uses secondary data from the District Health Information System (DHIS), which may contain biases and inaccuracies due to inconsistent data entry by Community Health Workers (CHWs). Secondly, differences in local healthcare infrastructure, socio-economic conditions, and the educational levels of CHWs in Yobe and Taraba states were not fully accounted for, which may affect the comparability of the results. Thirdly, the two-year study period (2016 and 2017) may not provide enough data to capture long-term trends and impacts of HMIS implementation. Additionally, the study focused only on pneumonia and diarrhoea, possibly overlooking other important health conditions that could benefit from improved HMIS tracking. Finally, limited access to detailed data restricted the analysis of the quality and efficiency of specific CHW tasks and interventions. Future research should extend study periods, include more health conditions, and conduct contextual analyses to tailor HMIS interventions effectively. Additionally, integrating emerging technologies, evaluating CHW training programs, fostering intersectoral collaboration, and analyzing policy and funding impacts will enhance the overall effectiveness of HMIS in reducing child mortality in Nigeria.

VIII. Conclusion

This study highlights the critical role of Health Management Information Systems (HMIS) in enhancing the efficiency and quality of tasks performed by Community Health Workers (CHWs) to reduce child mortality from pneumonia and diarrhoea in Nigeria. The findings demonstrate that improved data collection, management, and utilization through HMIS can significantly impact health outcomes. However, challenges such as data quality issues, limited technological infrastructure, and fragmented health information systems need to be addressed. By implementing comprehensive training programs, fostering intersectoral collaboration, and integrating emerging technologies, the potential of HMIS to support CHWs and improve child health outcomes can be fully realized. Future research should focus on extending study periods, including more health conditions, and analyzing the impact of policy reforms and funding to ensure the sustainability and effectiveness of HMIS interventions.

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