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HEALTH INFORMATION SYSTEM AND COLLABORATION FOR EFFECTIVE HEALTH SERVICES DELIVERY AMONG FEDERAL MEDICAL CENTRES IN NORTH-WESTERN, NIGERIA

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ABSTRACT

This study was carried out on the collaborative efforts on information resources sharing among Federal Medical Centres (FMCs) in the North-Western states of Nigeria to share and exchange resources for effective support and service delivery. Numerous advantages can result from effective collaboration, such as better resource allocation, greater service delivery, higher levels of innovation, and improved health outcomes. Considering the issue of scarce resources and inefficient budgetary distribution among the FMCs, these initiatives are crucial. FMCs are vital to the healthcare system in Northwestern Nigeria since they provide care for a diverse and often impoverished population. These institutions do, however, have a number of difficulties, such as limited funding, inadequate infrastructure, and the weight of complicated healthcare requirements. Resources and services are acknowledged as important variables since they significantly influence people's decisions about how to obtain knowledge and information necessary for life. Utilising an interview schedule to elicit responses from the target population, the study adopted took a qualitative approach. Thirty-one hospital managers, medical directors, senior healthcare professionals, and policymakers were among the thirty-one participants in the study. In order to emphasize the growing cooperative efforts across federal medical centers to enhance healthcare services and expand access to resources for efficient healthcare service delivery, a thematic analysis was carried out. Among the difficulties impeding collaboration include inadequate financial resources, a dearth of skilled workforce, and impediments to communication. Increasing funding and fostering synergy were two of the recommendations made in order to ensure smooth resource sharing among the FMCs.

Keywords: Collaboration, Resource sharing, Federal Medical Centres, Information health service delivery

Introduction

Federal Medical Centers (FMCs) are tertiary healthcare institutions that offer specialized medical/health services, conduct medical research, and provide training programmes for healthcare professionals. Even with their significance, FMCs in Northwestern, Nigeria, face many operational challenges that limit their effectiveness. FMCs are vital to addressing the health challenges both within and outside the country. These include inadequate funding, poor infrastructure, workforce shortages, and lack of advanced medical technology (Ibrahim, 2022). Moreover, the fragmented nature of healthcare delivery, with limited coordination and collaboration among FMCs, hampers efforts to improve healthcare outcomes.

The seven states of Jigawa, Kano, Kaduna, Katsina, Kebbi, Sokoto, and Zamfara make up Northwestern Nigeria. The region is distinguished by a dense population, a wide range of socioeconomic circumstances, and distinct healthcare needs at various levels. The region faces significant public health challenges, including high rates of infectious diseases, maternal and child mortality, and non-communicable diseases (Eze, 2020). The healthcare infrastructure is often inadequate, with limited access to essential medical supplies, outdated equipment, and insufficient healthcare workforce. These issues are exacerbated by socio-political instability and economic constraints, further straining the healthcare system (Ogundipe, 2022). North-west,, Nigeria is characterized by a high prevalence of communicable diseases such as malaria, tuberculosis, and meningitis, as well as increasing burdens of non-communicable diseases like hypertension and diabetes. FCMs are pivotal in addressing these health challenges, but they often operate under significant constraints, including limited funding, inadequate staffing, and outdated infrastructure (Nwafor, 2020). These factors underscore the importance of exploring collaborative approaches to optimize healthcare service delivery.

It is often acknowledged that cooperation between healthcare organisations is a major factor in the improvement of the health system. Numerous advantages can result from effective collaboration, such as better resource allocation, greater service delivery, higher levels of innovation, and improved health outcomes (Sirajo, 2023). In the context of federal medical centres in Northwest Nigeria, collaboration can facilitate the sharing of resources, knowledge, and best practices, enabling these institutions to overcome common challenges and optimize their operations (Yusuf, 2021; Adebayo, 2023). In North-Western, Nigeria, FMCs play a crucial role in providing healthcare services to a diverse and often underserved population.

However, these institutions face numerous challenges, including resource constraints, infrastructural deficiencies, and the burden of complex healthcare needs (Nwachukwu, 2024). Collaborative efforts among FMCs have been identified as a potential strategy to enhance healthcare delivery by pooling resources, sharing expertise, and improving efficiency. Effective collaboration among FMCs also leads to improved service delivery, when FMCs work together; they can develop standardised protocols and guidelines, ensuring consistency in patient care. This standardisation is crucial for maintaining high-quality care across different centres. Additionally, collaboration can streamline the referral process, enabling patients to access specialised services more efficiently. In a region where healthcare resources are stretched thin, such efficiencies can significantly impact patient outcomes, ensuring that timely and appropriate care is provided.

Statement of the Problem

The unequal distribution and ineffective use of information resources is one of the main issues FMCs in North-west, Nigeria are confronting. Lack of finance is a problem for many facilities, which causes shortages of necessary medical supplies, equipment, and prescription

drugs. This situation is exacerbated by a lack of proper maintenance and management of existing resources, resulting in wastage and suboptimal service delivery. For example, the shortage of critical medical supplies and equipment in many centres has been a significant barrier to providing timely and effective care (Okechukwu, 2020). FMCs in the region often face significant human resource constraints, including shortages of qualified medical personnel and high turnover rates. Many healthcare professionals are unwilling to work in rural and underserved areas due to poor working conditions, inadequate remuneration, and limited opportunities for career advancement. This has led to an uneven distribution of healthcare workers, with urban centres often being overstaffed while rural areas remain underserved (Adebayo, 2023).

The infrastructure of many FMCs in North-Western, Nigeria is inadequate and poorly maintained. This includes dilapidated buildings, outdated medical equipment, and insufficient power and water supply. Poor infrastructure not only hampers the delivery of quality healthcare services but also poses significant risks to patients and healthcare workers. For instance, the lack of reliable power supply often disrupts medical procedures and compromises the storage of temperature-sensitive medications and vaccines (Yusuf, 2021). The absence of a robust and integrated health information system is another significant challenge. FMCs often operate in isolation, with little or no sharing of data and information. This fragmentation impedes the ability to monitor and evaluate health outcomes effectively, plan and allocate resources efficiently, and respond promptly to public health emergencies. Furthermore, the lack of standardized data collection and reporting mechanisms hinders the ability to conduct meaningful research and implement evidence-based interventions (Nwafor, 2020).

Despite the potential benefits of collaboration, the FMCs in the region often operate independently, with limited interaction and cooperation. This lack of collaboration may be attributable to various factors, including bureaucratic bottlenecks, lack of trust, and competition for limited resources. The absence of coordinated efforts undermines the ability to address common challenges, share best practices, and leverage collective expertise and resources. This prompted the study to examine the enhancing collaborative efforts among FMCs in North-west, Nigeria.

Research Objectives

The objectives of the study were to:

1. identify the key barriers to effective integration and collaboration through Health Information Systems among Federal Medical Centres in North-Western Nigeria.

Research Questions

This study was sought to answer the following research question:

1. **What are the challenges affecting the integration of Health Information Systems for effective inter-institutional collaboration in health service delivery?**

Literature Review

The nation's Federal Medical Centers were founded to assist and cater to citizens' needs for health services; they can accomplish this more successfully when they work together. Despite the possible advantages, Okeke (2022) claims that there is currently little collaboration among FMCs in Northwest Nigeria. Nwafor, (2020) asserted that lack of collaboration is caused by a number of things, such as insufficient infrastructure, distrust, resource limitations, bureaucratic bottlenecks, and poor communication. These briefly explained below:

1. **Bureaucratic Bottlenecks:** Rigid administrative processes and regulations often hinder the implementation of collaborative initiatives. The lack of a streamlined framework for inter-institutional cooperation creates delays and complicates the coordination of efforts.
2. **Lack of Trust:** Trust issues among FMCs also impede collaboration. Competition for limited resources and a history of poor cooperation contribute to a lack of trust, making it difficult for centres to work together effectively.
3. **Resource Constraints:** Resource constraints, including shortages of essential medical supplies, equipment, and funding, further limit the capacity of FMCs to engage in collaborative activities. Many centres struggle to meet their basic operational needs, leaving little room for joint initiatives.
4. **Poor Communication:** Effective collaboration requires clear and open communication. However, many FMCs in North-west, Nigeria struggle with poor communication channels, hindering their ability to coordinate efforts and share information.
5. **Inadequate Infrastructure:** Inadequate infrastructure, including dilapidated buildings, outdated medical equipment, and insufficient power and water supply, poses significant challenges to collaboration. These infrastructure deficits make it difficult to implement and sustain joint initiatives.

Strategies for Enhanced Collaboration

These are avenues through which enhanced collaboration is achieved by organisations. There are a lot of strategies to be deployed. Osinubi (2021), made it clear that one of those strategies is the establishment of regional health networks. One of the key strategies to enhance collaboration among federal medical centres in Northwest Nigeria is the establishment of regional health networks. These networks can facilitate the coordination and integration of healthcare services, promote the sharing of resources and information, and ensure consistency in service delivery. Regional health networks can also provide a platform for joint planning, monitoring, and evaluation of health programmes and interventions. For example, the establishment of a regional health network can facilitate the joint procurement of medical supplies and equipment, leading to cost savings and improved availability of essential items. Ihekweazu (2020), said that collaboration can be enhanced through strengthening health information systems. Developing and implementing robust health information systems is essential to enhance collaboration among federal medical centres.

Integrated health information systems can facilitate the sharing of data and information, enable real-time monitoring and evaluation of health outcomes, and support evidence-based decision-making. This can be achieved through the development of standardised data collection and reporting mechanisms, the implementation of electronic health records, and the establishment of data-sharing agreements among federal medical centres. For instance, the

implementation of electronic health records can improve the continuity of care by ensuring that patient information is readily available across different centres. Ajayi (2021), also asserted that capacity building and training can be used as a strategy. Capacity-building initiatives are crucial to enhance collaboration among federal medical centres. Joint training programmes and workshops can help to address human resource constraints, improve the skills and competencies of healthcare workers, and promote the adoption of best practices. These initiatives can also foster a culture of teamwork and collaboration, which is essential for effective inter-institutional cooperation. For example, joint training programmes on emergency response and management can enhance the ability of healthcare workers to respond promptly and effectively to public health emergencies.

Ogundipe (2022) noted that promoting policy and regulatory reforms can be used as a strategy. Policy and regulatory reforms are essential to create an enabling environment for collaboration among federal medical centres. This includes the development and implementation of policies and regulations that promote inter-institutional cooperation, reduce bureaucratic bottlenecks, and ensure accountability and transparency. For example, the development of policies that incentivize collaboration, such as funding mechanisms that reward joint initiatives and partnerships, can encourage federal medical centres to work together. Additionally, regulatory reforms that streamline administrative processes and reduce bureaucratic barriers can facilitate the implementation of collaborative efforts.

Babalola (2020), stated that collaboration can be enhanced through enhancing community engagement. Community engagement is critical to enhance collaboration among federal medical centres. Engaging communities in the planning and implementation of healthcare programmes and interventions can help to ensure that their needs and preferences are considered. This can also foster trust and cooperation between healthcare providers and communities, which is essential for effective collaboration. For example, community engagement initiatives, such as community health committees and participatory planning processes, can provide a platform for dialogue and collaboration between federal medical centres and communities.

Methodology

To investigate how federal medical centers in Nigeria's North-western states may improve their joint efforts, a qualitative study approach was used, because qualitative research offers in-depth understanding of participants' experiences, perspectives, and motives, it is especially well-suited for comprehending complicated social phenomena. Semi-structured interviews in line with the research questions with important participants from federal medical centers in North-Western, Nigeria were used to gather data. Thirty-one hospital managers, medical directors, senior healthcare professionals, and policymakers were in the study. The interviews gathered detailed information on their views regarding the needs, purposes, and challenges of partnership activities. The thematic analysis was conducted to highlight the needs for partnership activities to improve healthcare services and increase access to resources for effective healthcare service delivery. Thematic analysis was used to analyze the interview data. This method involves identifying, analyzing, and reporting patterns (themes) within the data. It is a flexible approach that provides rich, detailed, and complex accounts of data.

Data Analysis and Results

Using thematic analysis, the following themes were generated:

Table 1.1

Variables	**Response Themes**			
Communication Channels	Use of centralized platforms, video conferencing, project management tools, cloud-based sharing.	Regular meetings, joint workshops, cross-center retreats.	Communication protocols, training programmes, clear hierarchies	Transparency in communications, feedback loops, surveys
	Inter-center platforms, centralized databases, shared equipment pools.	Standardized procedures, shared purchasing agreements, inter-center agreements.	Incentives for sharing, culture of sharing, leadership encouragement.	Partnerships with external organisations, shared research initiatives, joint training.
Leadership and Support	Role of leadership in fostering collaboration	Leadership initiatives have supported effective collaboration.		
Technology's Role	Problems with data sharing.	Technology as a facilitator and a barrier.	Technological advancements needed for better collaboration.	Potential solutions for seamless data exchange.
Impact on Patient Outcomes	Correlation between collaboration and patient care quality.	Patient outcome improvements through collaboration.	Unwilling to work in rural and underserved areas, leading to an uneven distribution of healthcare workers.	
Collaboration and Partnership	*Collaborative research can lead to new insights and innovations that can improve healthcare delivery*	shared health information system can help us track patient outcomes more effectively and make informed decisions	Building trust among centres.	Strategies for enhancing partnerships.

Discussion of the Findings

The collected data was analysed and discussed qualitatively as seen below:

Collaborative training programmes can help us build the capacity of our staff and provide them with the necessary skills to deliver high-quality care. Human resource constraints were identified as a significant challenge. Many healthcare professionals are unwilling to work in rural and underserved areas, leading to an uneven distribution of healthcare workers. According to Okechukwu (2020) that partnership activities can facilitate joint training programmes and workshops, improve the skills and competencies of healthcare workers and encouraging them to serve in underserved areas.

Poor infrastructure was another critical issue highlighted by participants. Collaborative efforts can help improve the infrastructure of federal medical centres by enabling joint investments and maintenance activities. *"By working together, we can pool our resources to improve our facilities and ensure that they meet the required standards"* commented a hospital administrator. According to Babalola (2020), the need for robust and integrated health information systems was emphasized. Partnership activities can facilitate the development and implementation of standardized data collection and reporting mechanisms, enabling better monitoring and evaluation of health outcomes. *"A shared health information system can help us track patient outcomes more effectively and make informed decisions,"* said a policy-maker. Participants also highlighted the need for collaborative research and innovation. According Adeyemi (2023), joint research initiatives can help generate evidence-based knowledge and develop innovative solutions to common healthcare challenges. *Collaborative research can lead to new insights and innovations that can improve healthcare delivery in our region, remarked a medical director.*

Conclusion

It was concluded that strengthening cooperative efforts among FMCs in North-Western, Nigeria is necessary to solve the various difficulties they encounter and raise the standard of healthcare in the area. The exchange of resources, knowledge, and information can be facilitated by collaborative techniques, which will improve the effectiveness and efficiency of healthcare delivery.

Recommendations

The following recommendations were made:

1. There is need to increase funding and creating synergy for seamless resource sharing among the FMCs.
2. There is need to form consortia comprising FMCs and other healthcare stakeholders to coordinate resources and strategies for collective impact.
3. There is need to foster regular communication channels and networking opportunities among FMCs to share best practices, innovations, and challenges.
4. There is need to invest in training programmes and continuous professional development for healthcare staff to build expertise and improve service quality.
5. There is need to collaborate on advocacy initiatives to influence healthcare policies, secure adequate funding, and address systemic challenges affecting FMCs.

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Author's Profile



Dr. Ibrahim Idi Ahmad, a native of Todarya village in Kazaure Local Government Area of Jigawa State, Nigeria, is a seasoned librarian and academic. He began his education at Sabaru Primary School and advanced through Government Secondary School, Kazaure, before earning his NCE at Kano State College of Education. He obtained a Bachelor's degree in Library and Information Science from Ahmadu Bello University, Zaria, in 1995, followed by a Master's degree (2008) and a PhD in the same field from Bayero University, Kano. Over the years, he has served as a teacher, administrator, and councilor in various educational and government institutions. He is currently the Polytechnic Librarian at Federal Polytechnic, Daura, Katsina State, and has participated in notable leadership and policy development programs, including the PLSC 51 Course at the National Institute for Policy and Strategy, Kuru, Jos.



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