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The Impact of Health Information Systems, Research and Development on Primary Health Care Service Delivery

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ABSTRACT

Background

Health information is the bedrock of decision-making in primary health care and across health care system building blocks, and it is essential for health care systems' policy development and governance, human resources development, implementation and regulation, health research, health education and training, service delivery, and financing. This research revealed how Nigeria has attempted to make the health information system and research and development more effective in its primary health care services by developing new health policy The aim of this study was to evaluate the impact of the health information system and research and development on primary health care service delivery in Nigeria.

Method

A mixed method (qualitative and quantitative) approach guided this study. This approach was adopted because of its ability to provide strengths that offset the weaknesses of both quantitative and qualitative methodological approaches.

Results

Out of 300 respondents recruited for the quantitative aspect of the study, 294 (98%) perceived that health information systems had an impact on primary health care service delivery. The qualitative aspect of the study established that most participants opined that health information systems were of great importance to primary health care service delivery. Since the two findings were the same, it showed that there was no doubt about the value of such systems in the respondents' and the participants' responses.

Conclusion

This study shows that most health professionals need better research knowledge. The study, therefore, recommends that the Nigerian government focus more on research training for health professionals and recruit more professionals into the health information system, research, and development departments to achieve the goals set by the policymakers.

Keywords Development, Health Information System, Health Policies, Primary Health Care, Research.

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INTRODUCTION

Health information systems within primary healthcare play a crucial role in managing various healthcare-related information, serving as a fundamental component of any healthcare system [1]. These systems, known as HIS, facilitate the generation, collection, assessment, communication, and utilization of data for decision-making across individual, population, facility, and public health surveillance levels [2]. A study emphasized that primary health care (PHC) is indispensable for achieving universal health coverage (UHC), emphasizing that functional health information systems and research are imperative [3]. These components are necessary for progress in delivering primary health care services to be attainable [4]. On the contrary, another study cautioned that the progress of PHC services could be improved by health information systems, research, and development if data is effectively generated, compiled, assessed, synthesized, and appropriately interpreted [5].

Globally, the political leaders in health have embraced the essential need to implement health information systems to study, monitor and evaluate the populace's health. At the same time, the World Health Organisation (WHO) went as far as designing steps to develop a health information system. These steps are as follows: review the existing system; define the data needs of the relevant units within the health system; determine the most appropriate and effective data flow; design the data collection and reporting tools; develop the procedures and mechanisms for data processing; develop and implement a training programme for the data providers and data users; pre-test the data collection, data flow, data processing, and the data utilisation, and monitor and evaluate the system; and finally, develop effective data dissemination and feedback mechanisms [6]. However, factors need to be improved for the smooth implementation of all these plans.

Based on previous findings, high-income countries have strictly followed these steps in developing and managing their health information systems, research, and development. In contrast, low-middle-income countries need a better orientation on these steps. This is why the WHO designed and publicised those steps [7]. More so, all the information that was publicised globally on preventive and curative measures, the affected populations, the various vaccines available and the most effective vaccines, and how to distribute the vaccines down to the grassroots level was made possible due to the effectiveness and hard work of the health information systems, the research and development departments of the WHO and the health departments in each country. Without the proper functioning of the health information systems and research and development, there will be an increase in the morbidity and mortality rates in High-income countries, especially in the low-and-middle-income countries [8].

Rwanda has been using its national health information system to pass the information on to its healthcare workers on prioritising and strengthening their research skills in the PHC settings [9]. Some other countries have also identified the importance of a health information system and research and development in their health policies, specifically in their PHC policies, because publicising information is necessary for the people within the communities to remain aware of health-related information [10]. Conversely, many countries are in the habit of developing and implementing health policies but have yet to think of evaluating the policies, and this evaluation is essential to ensure that the policies are achieving their set goals [11].

Rwanda also categorised the significant health policies adopted by each country using the WHO's 'building blocks' and evaluated the 'process' and 'content' components of Walt and Gilson's model. Furthermore, Rwanda's political leadership in health embraced the notion of a health information system to monitor its citizens' health [12]. Using its national health information system, Rwanda's health ministry used data to inform its priority settings and strengthen the research skills among the health workers [13]. Rwanda then integrated disease-specific systems for HIV, malaria, and tuberculosis so policymakers could easily monitor multiple health statistics using the same system. Rwanda, however, experienced quality issues when rolling out its national community health database, finding poor concordance between electronic and paper records [14].

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Comparatively, the policymakers that designed Nigeria's 2016 National Health Policy on PHC service delivery revealed that there were research structures, such as research institutes, as well as training institutions supporting learning and disseminating research results in the health systems within the country, but they were underfunded. The policymakers discussed further that there was limited collation, dissemination, and use of the evidence available from research for decision-making. The National Health Research Ethics Committee (NHREC) was also not able to monitor and provide adequate guidelines to the state and institutional HRECs due to underfunding and challenges with its operational structure, especially regarding the provision of dedicated professional staff, formal office space for its operations, and a dedicated budget. The above-mentioned issues prompted the researcher to conduct this research because although Nigeria has designed and implemented several policies for its PHC system, previous research has shown that Nigeria has not evaluated the health policies it designed and implemented [15].

The Nigerian health policy landscape has been marked by a recurring pattern of policymakers resorting to developing and implementing new policies as the primary approach to improving healthcare services at the grassroots level, especially in the context of the COVID-19 pandemic. However, a critical issue that warrants attention is the need for a comprehensive evaluation of these policies' effectiveness. This failure to rigorously assess the strengths and weaknesses of existing health policies before embarking on creating new ones presents a significant challenge. The research problem centres on a comprehensive evaluation of the most recent Nigerian health policy, specifically focusing on understanding why it failed to achieve its intended objectives. This problem statement addresses the persistent question of why previous policies have yet to be utilized to their fullest potential as valuable sources of insight to inform the development of new, improved health policies. To delve into this issue, this study will examine critical aspects of the health policy framework, with particular emphasis on the functioning of the health information system and the activities related to research and development. Despite formulating and implementing multiple health policies in Nigeria, the country continues to need help in realizing the goals set by policymakers for delivering quality primary healthcare services.

The Research Objectives of this study was

1. To determine the impact of the health information system on the primary healthcare service delivery in Ekiti State, Nigeria.
2. To determine the impact of research and development on primary healthcare service delivery in Ekiti State, Nigeria.

Methodology

This study applied the Health Policy Triangle (HPT) conceptual framework. The framework was developed by Walt and Gilson [16]. This framework consists of four elements: context (why do you want to evaluate this policy?); content (what is the existing policy mainly about?); process (how was the existing policy brought forward and implemented?); and actors (who participated in and influenced the formulation and implementation of the existing policy?) [17]. In this study, the actors were mainly the stakeholders that formulated the policy.This study adopted the pragmatism paradigm because it directly links the choice of approach to the purpose and nature of the research questions posed [18]. This paradigm also encourages the study to combine two research methods (qualitative and quantitative) to achieve quality research findings. This study used a mixed method design to evaluate Nigeria's existing 2016 National Health Policy on primary health care service delivery.

This design was chosen because the researcher intended to evaluate the health information system and research and development in the 2016 National Health Policy on primary healthcare and describe the related variables. A mixed method (qualitative and quantitative) approach guided this study to evaluate the existing 2016 National Health Policy on primary health care service delivery. A mixed methodology was adopted because it provides strengths that offset the weaknesses of both quantitative and qualitative methodological approaches. The qualitative approach has an inductive approach, is holistic and subjective, and has a process-oriented worldview, whilst the quantitative approach has a hypothetical-deductive, objective, outcome-oriented and rational worldview [19]. The study needed to adopt this methodology because the quantitative method alone provided a weak understanding of the subjective

inner context, and the respondents' voices needed to be heard directly. The study was conducted in the South-Western region of Nigeria. This research was conducted in Ado-Ekiti, Ekiti State. Ekiti State consists of 16 Local Government Areas with three senatorial districts, and Ado-Ekiti is the main capital city of the state. When conducting this study, the state had 395 primary health care centres (PHCCs), and Ado-Ekiti had 45 PHCCs. However, the study focused only on the most equipped PHCCs familiar with Nigeria's 2016 National Health Policy on PHC service delivery objectives.

A sample is a subject of a population's elements, the basic units of the collected data. At the same time, sampling selects cases to represent an entire population. They also define a sample as a subset of a population selected to participate in a study. In any research study, the sample is a small part of the whole from which information, facts or ideas about the whole are generated [20]. The study selected twenty PHC facilities, while the target population included the primary health care coordinators, nurses, doctors, community health extension workers (CHEWs), nutritionists, health recorders and pharmacists working in the Ado-Ekiti PHCCs. Only registered nurses, doctors, CHEWs, nutritionists, health recorders and pharmacists were recruited for the study and their opinions were sampled by sending the structured questionnaires to their email addresses. The researcher also conducted telephonic interviews on the WhatsApp platform with each primary healthcare coordinator. The researcher chose the email and telephonic interviews because of the ongoing global coronavirus pandemic, which limited face-to-face contact. The scope of the study was restricted to the evaluation of the 2016 National Health Policy on PHC service delivery in selected Ekiti State PHCCs in Nigeria.

Table 1: Tabular Presentation of the Respondents for the Quantitative Aspect of the Study

Respondents	Number of Respondents in each PHCC	Number of Respondents in all 20 PHCCs
Doctors	1	20
Nurses	5	100
Community Health Extension Workers (CHEWs)	5	100
Nutritionists	1	20
Health Recorders	1	20
Pharmacists	2	40
Total Number of Respondents	**15**	**300**

Note: *For the qualitative aspect of this study, the researcher recruited the coordinator of each PHCC using a purposive sampling technique and interviewed these 20 coordinators overseeing the selected PHCCs.*

Nursing research must not only have the potential to generate and refine knowledge; it must be ethical in its development and implementation [21]. Before collecting data from the respondents, full approval and an ethical clearance certificate were obtained from the University of KwaZulu-Natal's Research Ethics Committee. The protocol number was HSSREC/00002401/2021, and this study strictly followed the eight ethical principles of research (anonymity, informed consent, autonomy, justice, beneficence, non-maleficence, confidentiality, and fidelity). Data collection is the process of gathering and measuring information on variables of interest systematically that enables one to answer stated research questions, test hypotheses, and evaluate outcomes [22]. The gatekeeper's letter of permission from the Ado-Ekiti Local Government unit, together with the ethical certificate from the university, were submitted to the health centres' coordinators and heads as part of securing permission to use the health centres selected as the study locations and to have access to the health workers in these health centres. The coordinators of the 20 PHCCs were also given earlier notification before conducting the study. This study occurred in three different phases and the phases are listed below.This study utilised the Statistical Package for Social Sciences (SPSS 25), univariate evaluation (frequency distribution and

percentages) and Chi-Square tests to evaluate the quantitative data generated. The Chi-square evaluation was utilised to determine the relationship between the important variables of this study. The decisions on the hypotheses were based on the comparisons of both calculated and tabulated X2 at a 0.05% significance level. Results from the research instruments were used to compare the views of the other authors in the extant literature, after which the researcher arrived at a logical conclusion to the study. These methods were used to test the hypothesis on evaluating the 2016 National Health Policy on primary health care service delivery in Ekiti, Nigeria. The Chi-square (X2) is a non-parametric statistical method that deals with the difference between frequencies observed in the sample and the expected frequencies obtained from the distribution [23].

The qualitative data generated in the study was analysed using qualitative data evaluation software called NVIVO [24, 25]. The in-depth interviews recorded onto the tapes were transcribed to facilitate this. The responses to each question were summarised and important quotations were reported verbatim to complement the quantitative findings. Qualitative data generated in the study was analysed using qualitative data analysis software called NVIVO. This technique makes inferences by systematically and objectively identifying the specified characteristics of messages. The interview guide focused its questions on six sections, namely: the health information system and research and development on PHC service delivery; health promotion, community ownership and participation in PHC delivery; human resources and partnerships for health in PHC service delivery; the distribution of medicines and health financing; governance and leadership in the effective implementation of PHC and provision of health infrastructure in PHC.

It is also significant to note that the data analysis took place in five stages to ensure adequate analysis of the collected data. These steps included familiarisation, identifying the thematic framework, indexing and coding, charting and mapping, and interpreting the analysed data.

(a) Familiarisation: This entails the reading and re-reading of transcripts, research notes and their translation to ensure data reduction. The audio recordings of the interviews were transcribed verbatim. After that, the transcripts were reviewed and typed to provide raw data for analysis. This enabled the researcher to identify the key themes and ideas as they began to emerge with the initial reading of the transcript.

(b) Identification of themes: This concerns the notification and identification of significant themes. The themes were identified from the data collected and used to examine the data. In the same vein, new themes emerged in the interviews were added and examined concerning the research questions. This section was followed by an open coding procedure, which was utilised to identify all emerging themes relevant to the understanding of the research study.

(c) Coding and Indexing: The researcher applied the thematic framework to the data. Each section of the interview text was marked with appropriate themes and coded with particular numbers or short phrases. This stage deals with identifying all emerging themes relevant to the understanding of the research study.

(d) Charting: The data were re-arranged according to the themes identified under main headings and sub-headings. All statements about a specific theme were arranged into a single file (Microsoft Word). This was used to distinguish or note the similarities in the opinions of the stakeholders selected for the interview.

(e) Mapping and Interpretation: This was the final stage of data analysis. The range of responses, central themes, shared perceptions, and dissenting viewpoints were condensed and interpreted. Significant quotes expressing emerging themes were noted and highlighted [26].

Results

The qualitative data was evaluated systematically and objectively to identify the specific characteristics of the messages. The data was also coded, and the emerging themes were carefully identified. The categories of data from this section are discussed below. The quantitative data is also discussed below.

The Impact of the Health Information System on PHC Services

The health information system is for monitoring and evaluation purposes. The information system also serves broader objectives, such as providing an alert and early warning capability, supporting patient and

health facility management, enabling planning, underpinning, and stimulating research, permitting health situation and trend evaluates, orienting global reporting, and reinforcing the communication of health challenges to diverse users. From the quantitative view of the study shown i**n Table 2, 294** (98.0%) respondents claimed that the health information system greatly impacted PHC services.

According to an in-depth interview participant:

Health information is real, and it is highly important to provide information on how to develop and improve the PHC, but it is not really working in line with the objectives of health information. Because our health information staff are now after card (i.e they are after the opening, distribution, collection, and keeping of patients' medical cards) alone, they do not want to know that the health information system is beyond that (P18, nurse, female).

According to another in-depth interview participant:

Health information is an indispensable unit in the PHC setting because the information is power and currently, it is existing. But I cannot really say that it is 100% effective. I can only say that it is effective to some extent because most of them do not calm down to get adequate information from the patient, while some settings do not even make use of the data collected for anything. The data are just there (P6, medical doctor, male).

Table 2:Percentage Distribution of the Impact of Health Information on the PHC Service

Response	Frequency	Percentage
Yes	294	98.0%
No	6	2.0%
Total	300	100.0%

The Relationship between the Health Information System, Research, and Development and its Impact on Primary Health Care Service Delivery

The relationship in Table 3 below shows that the findings of the hypothesis were statistically significant at a 0.05 level of significance. Thus, the null hypothesis (H_0) was rejected, while the alternate hypothesis (H_1) was accepted. The $X^2 = 20.798^a$, df = 4 and P < 0.05 (0.000), and the contingency coefficient of the two variables was 0.266. This shows that 77% of the respondents (primary health care professionals) posited that the health information system, research, and development had positive results on the development of the PHC system.

The Use of the Health Information System, Research, and Development to Restructure the Health Policy

The health information system and research and development were deemed essential and indispensable in the healthcare sector and, most importantly, in the PHC sector. Without the health information system and research and development unit, there could be no progress. More so, there were various views on this unit. The findings showed that most participants believed health information was highly important in PHC and the greater healthcare sector. It was also discovered that health information research could be used to develop PHC services in the same way that research is being used to develop the world.

According to the data displayed in Table 2, all 300 (100%) respondents were of the opinion that health information was highly needed in the restructuring of the health policy. Furthermore, the health information system and research and development could never be side-lined in the restructuring of the health policy.

According to an in-depth interview participant:

This will have to depend on information obtained from the local communities. The information provided is important to supply information to the government and health policymakers on people's status of health, so that they can know where to address societal health problems. In so doing, this will help restructure the health policy, as new ideas on how to improve the community health will be

obtained from the people. Furthermore, it is only through research that we can gather viable and trusted information about public health and current trends in community health. Government, NGOs, and policymakers cannot have any health information unless a research survey is conducted on a specified population. The data obtained from the public will be evaluated and these public opinions contribute greatly to the development of PHC policy (P20, nurse, female).

Factors that are Impeding the Positive Impact of the Research Findings on the Development of PHC Services

Many factors are needed with the aim of improving research establishment in the primary healthcare setting, including the current trend of diverting public funds into personal pockets. Based on a participant's response, many superstitions within the community would never allow them to accept recommendations that did not fit with their cultures. For instance, the participant mentioned eating snails and okra, which are good sources of iron but not acceptable because of their culture.

Some people of a particular religion believed that westernisation, especially education, was another way of enslaving African countries. It was also discovered that funding problems, the theft of medical equipment, incompetent health workers, staff shortages, a poor maintenance culture and a lack of health infrastructure like buildings, roads, vehicles for transportation and cabinets to store medical equipment were constraints that would not aid the development of PHC.

Table 3:Health Information System and Research and Development's Impact on the Primary Health Care Service Delivery in Ekiti State, Nigeria

	Health Information System and Research and Development		
Positive result on the development of the PHC	**Yes**	**No**	**Total**
Yes	16(5.33%)	35(11.67%)	51(17%)
No	215(71.67%)	34(11.33%)	249(83%)
Total	**231(77%)**	**69(23%)**	**300(100.0%)**

The data presented in Table 4 provides that 41.25% of the respondents, or 33 individuals, highlighted inadequate research knowledge as a significant barrier. This underscores the need for better education and training in research methodologies among PHC professionals. While, financial constraints also loom large in this context. Nearly a quarter of the respondents (23.75% or 19 individuals) identified a lack of funding as a critical hurdle. This financial challenge can severely limit the capacity for research and innovation within PHC services. Moreover, 28.75% of the respondents raised concerns about staffing issues, or 23 individuals. Staff shortages can compromise research efforts and the overall quality of PHC services, reflecting the importance of maintaining an adequate workforce in healthcare. Another noteworthy finding is that 15.91% of the respondents (14 individuals) believed that the absence of development programs hindered progress in PHC. This underscores the potential benefits of instituting programs aimed at enhancing PHC services.Furthermore, most respondents, comprising 62.7% (or 188 individuals), recommended that health policies be evaluated regularly at least once a year. This suggestion underscores the perceived importance of ongoing policy assessment to address the challenges mentioned earlier and improve PHC services over time. The analysis also revealed that three key stakeholders—the government, healthcare staff, and community

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members—play pivotal roles in effectively using research findings.

Table 4: Factors that Likely Impeded the Positive Impact of the Research Findings on the Development of the PHC

Response	Frequency	Percentage
Inadequate knowledge of research	33	41.25%
Lack of funding	19	23.75%
Inadequate staff	23	28.75%
Lack of development programmes	14	15.91%
Total	**80**	**100.00%**

Discussion

According to the findings of this study in Table 2, 294 (98.0%) respondents claimed that the health information system greatly impacted PHC services. In support of this finding, another study conducted on the importance of health information showed that health information is highly needed to get quality data from an individual, family, and community [26]. While a finding from a study in Iran revealed that health information is the key factor needed in the development of health policies. The same authors discuss further that many health sectors are still suffering from poor health information system [27]. Conversely, Mi, Enrico, and Farah opposed that health information can also impede the progress health policies and PHC services especially if the data is not generated, compiled, evaluated, synthesised, and interpreted properly. In addition to these findings, the poor progress in health information is due to shortage of continuous training; shortage of in-service training; deficiency of computerised facilities in recording data; and deficiency of web-based technologies in transferring information [28].

The study also unveiled that the outcome of Health Information System, Research, and Development has impact on Primary Health Care Service Delivery. This is why the health information system is indispensable in the healthcare sector and, most importantly, in the PHC sector. Without the health information system and research and development unit, there will not be progress in the health care sector. Congruently, the data displayed in Table 2, showed that 300 (100%) respondents believed that health information was highly needed in the restructuring of the health policy. Similarly, the health information system can never be side-lined in the restructuring of the health policy. Health information systems (HIS) also enable data generation, collection, evaluation, communication, and use for decision-making at the individual, population, facility, and public health surveillance levels [29].

Based on some previous findings, before a health information system can be effective, the Staff should be able to utilize the new data recording programmes like electronic health records (EHR), electronic medical records (EMR), hospital information systems (HIS), health information technologies (HIT), and electronic patient records (EPR). But if the Staff do not know how to utilize these new data recording programmes may affect the development and restructuring of the health policy. Therefore, there is a need for adequate and regular training of staff in these departments especially on how to conduct scientific research and use of stored records [30, 31].

Furthermore, the study revealed some factors that are still impeding the positive impact of research findings on the development of PHC Services and some of the factors identified are religion, and culture

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(mainly superstition). Based on a participant's response, many superstitions within the community would never allow them to accept recommendations that are not in line with their cultures. For instance, the participant mentioned that eating of snails and okra, which are good sources of iron are not acceptable during pregnancy because they belief that the child will be salivating excessively. In addition to this finding, some religions also believed that westernisation, especially education is another way of enslaving Africans [32]. Conversely, a study conducted by opposed these findings by explaining that the society, and policy are the main factors that impede the positive impact of research findings on the development of PHC Services [33]. While a recent study on PHC divided these factors into six themes: research planning, infrastructure, engagement of healthcare professionals, knowledge translation, the relationship between universities and health services, and international collaboration; the notable challenges are the complexities of research planning, lack of infrastructure, difficulties in engaging healthcare professionals, and barriers to knowledge translation [34]. However, a study conducted in England concluded that relationships, cultures, resources, capabilities, governance, leadership, and external factors [35].

The study identified some additional obstacles affecting the health information system and research and development within PHC services; these obstacles include inadequate funding, understaffing, and poor electronic health records. The data highlights the multifaceted challenges facing the integration of research findings into PHC service enhancements. These findings stress the importance of addressing research knowledge, funding, staffing, and the need for continuous policy evaluation to advance PHC services. Moreso, a study carried out in South Africa underscore the pivotal roles of government, healthcare staff, and community members in this process, along with the imperative of strengthening the health information system and research and development capacities within PHC services [36, 37].

Conclusively, the health information system and research and development are part of the bedrock of the primary health care system, and the health information system and the research and development department must generate, collect, evaluate, and communicate health recommendations to the whole population. Globally, the importance of health information systems and research and development is well-identified and noticed. This is why Nigeria is trying so hard to make this department 100% effective. Still, some factors like corruption, embezzlement, staff shortages, and other factors identified by the respondents and the participants are overwhelming the efforts of the leaders in the health sector in Nigeria. Therefore, this research encourages policymakers and other concerned bodies to work on the recommendations highlighted below

Conclusion

The health information system and research and development are part of the bedrock of the primary health care system, and the health information system and the research and development department have to generate, collect, evaluate, and communicate health recommendations to the whole population. Globally, the importance of health information systems and research and development is well-identified and noticed. This is why Nigeria is trying so hard to make this department 100% effective. Still, some factors like corruption, embezzlement, staff shortages, and other factors identified by the respondents and the participants are overwhelming the efforts of the leaders in the health sector in Nigeria. Therefore, this research encourages policymakers and other concerned bodies to work on the recommendations highlighted below.

Recommendations

1. **Government Support for Infrastructure**: The government should allocate resources to furnish Primary Health Care (PHC) centres with the necessary equipment for the health information system and the research and development department. This will ensure that these critical components have the tools to function effectively.

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2. **Enhanced Training and Skill Development**: The National Primary Health Care Development Agency (NPHCDA) should take proactive measures to enhance the skills of PHC staff. This can be achieved through regular training sessions focusing on modern research methodologies and contemporary data recording practices, enabling them to stay updated and proficient in their roles.
3. **Structured Staff Training Budget**: A dedicated budget should be allocated for staff training to guarantee consistent skill development. Training sessions should be scheduled on a phased, rotational basis to minimize disruptions to healthcare services. This approach ensures that staff members continuously improve their abilities without compromising service delivery.
4. **Annual Evaluation of PHC Policy**: Regularly assessing the effectiveness of the primary health care policy is crucial. This annual evaluation provides an opportunity to identify strengths and weaknesses, allowing for timely adjustments and improvements to enhance the quality of healthcare services.
5. **Enforcement of Accountability**: To safeguard the allocated funds and maintain transparency, stringent measures should be implemented to deter embezzlement. Implementing solid penalties for anyone found guilty of misappropriating funds allocated to these programs will serve as a deterrent and reinforce financial integrity.

Limitations and Strengths

This study dissected the research problem at the state level, and the research could be advanced by looking at it at the federal level. During the data collection processes, the researcher faced electricity and data outages, among other issues. The strength of this research was the ability of the study to adopt a mixed methods approach because this provided strengths that offset the weaknesses of the individual quantitative and qualitative methodological approaches.

Author Contribution Statement

Dr Olunike Blessing Olofinbiyi developed and carried out the study and evaluated and interpreted the data. While Prof. Lufuno Makhado corrected and perfected the manuscript. All authors edited and approved the final version of the manuscript.

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