



UTILIZATION OF INFORMATION COMMUNICATION TECHNOLOGY IN PLANNING OF HEALTH EXTENSION PROGRAMMES IN NSUKKA LGA

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Abstract

The study focused on utilization of information communication technology in planning of health extension programmes in Nsukka LGA. The study was guided by two research purposes and two research questions. Descriptive survey research design was used in the study. The population of the study comprised 1,456 health workers. A sample of 185 health workers were sampled using simple random sampling technique. The instrument for data collection was the researcher's self-developed questionnaire titled utilization of information communication technology in planning of health extension programmes (UICPHEP) questionnaire ($r = 0.84$). Data were analysed using mean and standard deviation. Finding revealed that the extent data collection and management systems can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high; and the extent geographic information systems (GIS) can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high. based on the findings, some recommendations were made among which include that health planners in Nsukka LGA should receive continuous training on the use of modern data collection and management systems. This will ensure that they remain proficient in handling these systems, leading to more accurate data analysis and informed decision-making.

Keywords: Utilization; Information Communication System; Planning; Health Extension Programme.

Introduction

Extension programme is an organized, systematic effort aimed at disseminating knowledge, skills, and technologies to individuals or communities to improve their living standards, productivity, and overall well-being. Nwachukwu (2018) defined an extension programme as an activity which involves the transfer of research-based information from experts, typically in areas like agriculture, health, or community development, to target populations, enabling them to adopt new practices that enhance their livelihoods. The primary objective of extension programmes is to bridge the gap between research institutions and the public, fostering innovation and sustainable development in rural areas. There are different kinds of extension programme, some of them include: agricultural extension, environmental extension, educational extension, and health extension which is the focus of this paper.

Health extension is the aspect of extension programme which focus specifically on disseminating health related information. The effective planning of health extension programmes is crucial for improving public health outcomes, particularly in rural areas such as rural communities in Nsukka LGA, Enugu State. In recent years, the integration of Information and Communication Technology (ICT) in the health sector has changed the way health programmes are planned, managed, and executed (Onuorah & Nwafor, 2019). The use of ICT tools such as data collection systems and Geographic Information Systems (GIS) has proven to be instrumental in improving the efficiency, accuracy, and reach of health extension services (Igbokwe & Onoh, 2017). Health extension programmes are designed to provide essential healthcare services to remote populations, and the proper planning of these programmes is key to

their success. The utilization of ICT in planning allows for better decision-making, resource allocation, and monitoring of health interventions (Adebayo & Ogundipe, 2020).

Utilization refers to the effective application of available resources, tools, or systems to achieve specific objectives. According to Uzoechina and Onyekwere (2017), utilization involves employing existing resources in a manner that maximizes their potential and ensures efficiency in achieving desired outcomes. In the context of healthcare, utilization refer to how healthcare facilities, personnel, and technologies are deployed to enhance service delivery. This definition emphasizes the purposeful application of resources to improve outcomes, whether in healthcare, education, or other fields. Utilization can also be defined as the extent to which a particular service, technology, or resource is used within a specific context. Eneh and Nwokocha (2019) describe utilization as the degree to which a system or service is employed by its target users to fulfill a function or solve a problem. This definition focuses on the actual level of usage, which can vary based on factors such as accessibility, awareness, and relevance. In this study, utilization refer to how frequently ICT tools like data collection systems and Geographic Information Systems (GIS) are employed by healthcare planners to improve program outcomes.

An information and communication system is defined as a network that facilitates the exchange, processing, and distribution of data between individuals or organizations. According to Nwachukwu and Ibe (2018), these systems comprise both technological and human components that enable the collection, storage, and transmission of information through electronic devices, such as computers and telecommunication networks. In this sense, information and communication systems serve as the backbone of modern organizations, enabling efficient communication, decision-making, and operational processes. In another view, information and communication systems are seen as integrated technological platforms designed to manage and streamline the flow of information within and across entities. Afolabi (2019) explains that such systems combine various information technologies, including databases, software applications, and communication tools, to provide a cohesive framework for data management and communication. These platforms are critical for organizations and sectors like healthcare, where real-time information is necessary for decision-making and service delivery. This definition highlights the integration of various technologies and their role in ensuring smooth communication and information management. Although there are different ICT tools and platforms that can be used to plan health extension programme, this study focused on the use of data collection and management systems, and geographic information systems (GIS).

A data collection and management system refers to an organized framework used to gather, store, and process data systematically, enabling efficient access and analysis for decision-making purposes. According to Afolayan (2016), such systems integrate both technological tools and processes to ensure that data is collected accurately, stored securely, and managed effectively. The system is designed to streamline data entry, reduce errors, and allow for easy retrieval and analysis, making it essential in sectors like healthcare, education, and business. Data collection and management systems are particularly crucial for improving service delivery and operational efficiency by providing real-time, reliable data that can guide planning and resource allocation. Data collection and management systems are fundamental ICT tools that play a significant role in the planning process. These systems allow for the systematic gathering, storage, and analysis of health data, providing healthcare planners with the information necessary to make informed decisions (Ozor, 2016). In Nsukka Local Government Area (LGA), where rural health services face numerous challenges such as inadequate infrastructure and limited

healthcare personnel, the utilization of data collection systems can greatly enhance the planning of health extension programmes by ensuring that resources are directed to areas of greatest need.

Geographic Information Systems (GIS) are defined as integrated computer-based tools designed for capturing, storing, analyzing, managing, and presenting spatial or geographic data. According to Adeyemi and Okafor (2017), GIS enables users to visualize, interpret, and understand spatial relationships and patterns through maps, charts, and reports. This system is widely used in various fields, including urban planning, environmental management, healthcare, and resource allocation, as it allows for the integration of data from multiple sources to provide insights into geographic trends and relationships. In the context of healthcare, GIS is particularly valuable for planning and implementing health interventions by mapping disease patterns, healthcare facilities, and resource distribution. The application of Geographic Information Systems (GIS) in health programme planning has become increasingly important. GIS technology enables the visualization and analysis of spatial data, helping planners to map out health service delivery points and identify geographic disparities in healthcare access (Eze, 2018). By integrating GIS into health extension planning in Nsukka LGA, programme administrators can develop targeted interventions that address the specific needs of different communities, thereby improving healthcare delivery and outcomes in rural areas.

Therefore, given the potential of ICT tools like data management systems and GIS to improve the planning of health extension programmes, this study aims to explore the extent to which these technologies are currently being utilized in Nsukka LGA, Enugu State. Having a good understanding of the level of ICT adoption and its impact on health programme planning can inform future policies and strategies to enhance the effectiveness of health extension services in rural Nigeria.

Statement of the Problem

The planning and implementation of health extension programmes in rural areas like Nsukka Local Government Area (LGA) are often confronted with significant challenges, including inadequate access to timely and accurate data, poor resource allocation, and limited visibility into the health needs of the population. These challenges hinder the effectiveness of health extension programmes, making it difficult for health authorities to make informed decisions and deliver essential healthcare services to underserved populations. Traditional methods of planning health programmes in Nigeria often rely on outdated and inefficient data collection processes, which further exacerbate these challenges, leading to suboptimal health outcomes in rural communities.

In recent years, Information and Communication Technology (ICT) tools such as data collection and management systems, as well as Geographic Information Systems (GIS), have demonstrated their potential to revolutionize the planning and execution of health programmes. These technologies enable health planners to gather accurate data, analyze spatial health trends, and allocate resources more effectively, thus improving the quality of healthcare services delivered to rural areas. Despite the proven benefits of ICT in healthcare, its utilization in the planning of health extension programmes in rural Nigeria, particularly in Nsukka LGA, remains limited. The lack of widespread adoption of ICT tools like data management systems and GIS continues to impede the ability of health planners to make data-driven decisions that could improve healthcare access and outcomes in the region.

Therefore, the study sought to examine the extent to which information communication technology can be utilized in planning of health extension programmes in Nsukka LGA, Enugu State.

Purpose of the Study

The general purpose of the study was to examine the extent to which information communication technology can be utilized in planning of health extension programmes in Nsukka LGA, Enugu State. Specifically, the study sought to:

1. Ascertain the extent to which data collection and management systems can be utilized in planning of health extension programme in Nsukka LGA, Enugu State.
2. Determine the extent to which geographic information systems (GIS) can be utilized in planning of health extension programme in Nsukka LGA, Enugu State.

Research Questions

The study was guided by the following research questions:

1. To what extent can data collection and management systems be utilized in planning of health extension programme in Nsukka LGA, Enugu State?
2. To what extent can geographic information systems (GIS) be utilized in planning of health extension programme in Nsukka LGA, Enugu State?

Method

The study adopted descriptive survey research design. The population of the study comprised all the 1,456 health workers in Nsukka LGA. 185 health workers were sampled using simple random sampling technique. Instrument used for data collection was the researcher's self-developed questionnaire titled utilization of information communication technology in planning of health extension programmes (UICTPHEP) Questionnaire ($r = 0.84$). The data for the study was collected solely by the researcher alongside two research assistants. Mean and standard deviation were used for data analysis.

Result

Research Question One: To what extent can data collection and management systems be utilized in planning of health extension programme in Nsukka LGA, Enugu State?



Table 1: Mean responses on the extent data collection and management systems can be utilized in planning of health extension programme. n=185

S/N	Item Statement	Mean	SD	Decision
1	Data collection systems are used very often in planning health extension programmes	2.50	.80	High Extent
2	Data management systems improves health programme planning	2.88	.58	High Extent
3	Health planners rely on electronic data collection tools in planning health extension programs	2.66	.68	High Extent
4	Data collection and management systems are accessible to health extension programme planners	2.70	.63	High Extent
5	Health extension programme planners receive adequate training on the use of data management systems	3.56	.71	High Extent
6	Data management systems influence decision-making in health extension programme	3.82	.51	High Extent
7	Data from previous health programmes used in planning new health extension programmes are effective	3.48	.74	High Extent
8	Data management system track the progress and outcomes of health extension programme	3.38	.73	High Extent
9	Data collection systems align with the health needs of the population.	3.10	.61	High Extent
Grand Mean		3.12	0.66	High Extent

Table 1 revealed the mean responses on the extent data collection and management systems can be utilized in planning of health extension programme. The table showed that the mean ratings ranged from $M = 2.50 - 3.82$. Therefore, the grand mean of 3.12 and SD of 0.66 showed that all the items in this cluster were accepted as the extent data collection and management systems can be utilized in planning of health extension programme in Nsukka LGA, Enugu State.

Research question two: To what extent can geographic information systems (GIS) be utilized in planning of health extension programme in Nsukka LGA, Enugu State?

Table 2: Mean responses on the extent geographic information systems (GIS) can be utilized in planning of health extension programme n = 185

S/N	Item Statement	Mean	SD	Decision
10	GIS technology is utilized in the planning of health extension programme	3.54	.60	High Extent
11	GIS help in the allocation of health resources across Nsukka LGA	3.17	.53	High Extent
12	GIS is effective in identifying areas in need of health interventions	3.37	.90	High Extent
13	GIS technology is accessible to health planners in Nsukka LGA	3.07	.59	High Extent
14	Health planners in Nsukka LGA are adequately trained to use GIS in health extension planning.	3.60	.59	High Extent
15	GIS impact the decision-making process in health extension programme planning	3.35	.60	High Extent
16	GIS improve the mapping of health facilities and services in Nsukka LGA	3.41	.72	High Extent
17	GIS is effective in tracking and managing the geographic spread of diseases in Nsukka LGA	3.57	.79	High Extent
18	Integration of GIS technology enhance the overall efficiency of health extension programmes	2.60	.70	High Extent
Grand Mean		3.29	0.66	High Extent

Table 2 revealed the mean responses on the extent geographic information systems (GIS) can be utilized in planning of health extension programme. The table showed that the mean ratings ranged between $M = 2.60 - 3.60$. Therefore, the grand mean score of 3.29 and SD of 0.66 showed that all the items in this cluster were accepted as the extent geographic information systems (GIS) can be utilized in planning of health extension programme in Nsukka LGA, Enugu State.

Discussion of Findings

Finding from research question one showed that the extent to which data collection and management systems can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high. This finding aligns with studies that emphasize the role of robust data management systems in improving health planning and decision-making. According to Adebayo and Okonkwo (2017), effective data collection systems are essential in the health sector as they provide accurate, real-time information that informs the allocation of resources and the planning of health interventions. The high utilization of these systems in Nsukka LGA suggests that health planners have recognized the importance of evidence-based planning, which enhances the efficiency of health programmes and improves service delivery. Additionally, Agbo and Nnaji (2019) noted that digital data management systems streamline the monitoring of health



programmes, helping to track progress and identify areas needing improvement. This further supports the finding that Nsukka LGA is effectively using data systems to enhance its health extension efforts.

Another finding showed that the extent to which geographic information systems (GIS) can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high. This finding reflects the growing recognition of the importance of spatial data in health planning. GIS has been instrumental in identifying geographic disparities in health service delivery, mapping disease outbreaks, and allocating resources efficiently. Nwachukwu and Ugochukwu (2016) reported that GIS technology has significantly improved health planning in Nigeria, especially in rural areas, by allowing health planners to visualize and analyze spatial data related to health outcomes and infrastructure. In Nsukka LGA, the high utilization of GIS demonstrates that health planners are leveraging this technology to enhance the effectiveness of health interventions. Additionally, Obi and Eze (2018) highlighted that GIS can be used to map high-risk areas and guide the distribution of health resources, ensuring that interventions are targeted and effective. The high level of GIS utilization in Nsukka LGA underscores its critical role in optimizing health extension programmes for better public health outcomes.

Conclusion

Based on the findings of the study, it was concluded that the extent to which data collection and management systems can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high. The extent to which geographic information systems (GIS) can be utilized in planning of health extension programme in Nsukka LGA, Enugu State was high.

Recommendations

Based on the findings of the study, some recommendations were made, among which includes that:

1. Health planners in Nsukka LGA should receive continuous training on the use of modern data collection and management systems. This will ensure that they remain proficient in handling these systems, leading to more accurate data analysis and informed decision-making.
2. The ministry of health should increase investment in Geographic Information Systems (GIS) technology. Again, the government and health institutions in Nsukka LGA should prioritize funding for GIS infrastructure and software to enhance the identification of health service gaps and efficient resource distribution. This will help in the accurate mapping of disease patterns and the identification of rural area.



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