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Influence of Health Management Information System in the Performance Primary Healthcare Services in Niger State

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Abstract

The present study was conducted to assess the HMIS in the Performance of PHC Services of Niger state, Nigeria, with focus on influence of HMIS and level of PHC service performance in Niger state. Two research questions and null hypotheses were constructed to guide the investigation. The descriptive survey design that is cross-sectional was used for the study. Proportionate stratified random sampling technique was used to select 363 participants from 212 PHCFs across three LGA's of GPZs in Niger State. The instrument for data collection was an adapted structured questionnaire used in similar research. The tool consists of 18-items with sub-variables ranging from 3 to 5, structured on five-point Likert rating format classified into five sub-scales. The reliability of the instrument was determined using Cronbach alpha technique yielded .95. The data collected was analyzed using both descriptive and inferential statistics. The research results reveal a strong and positive non-significant relationship between HMIS and Performance of PHC service in Niger State. Consequently, the researcher proffers recommendations on a need to strengthen HMIS strategies, using model devices with comparative benchmark using global indicators. It's the application of these theoretical concepts that will help to promote performance of PHC services of modern era.

Keywords: Influence, Performance, Primary HealthCare, Services.

Introduction

The influence of Health Management Information System (HMIS) in the Performance Primary Healthcare (PHC) Services in Niger State, is to improve quality of data management for effective planning of healthcare services at grassroot level, to less hospital admissions, lower health expenditure and better health outcomes, with emphasis on services delivery processes to determine changes experienced over a certain period (Bresick, et al., 2019).

HMIS as a process of documenting, store, retrieve and processed health data to improve decision-making (Endriyas, et al, 2019). Countries with efficient health care system to combat emerging disease and public health menace abound to a certain extent, solely depends on data quality and action taken to better health outcome.

In most developing countries, getting valid and consistent data availability to measure PHC performance quality become critical. These inadequate data tracking techniques leads to huge health insecurity and endanger national security of public health emerging diseases.

NSPHCDA as a data driven organization operates on global HMIS "district health information system (DHIS2)" this eases data transmission process, tracking, repositories and action taken to

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improve data quality for better health outcome. The system is though, faced with critical challenges of inadequate knowledge and interpretation of data by care providers, inadequate funding of data transmission to appropriate level and poor or non-networking system in some part of the state.

Likewise, the prolific of data tools and elements at service points, despite harmonization of data elements, partners redesign some elements to ram with their goal, couple with inadequate Health Care Personnel, fragment sources data and health program on emerging disease limits state ability to have a comprehensive data. Also, obstacles of insuring data not only collected, but used routinely and effectively to prioritize areas for improvement and monitor progress has compound the challenge (Kamaliah& Chloe, 2017).

These gaps indeed make it difficult-to-measure service performance. These perhaps explain the erratic service deliveries to address population's health-related needs (Asamani et al., 2018), as it requires new strategies using multi-dimensional approach for reformation to mitigate data quality challenges that retrograde performance of PHC services which the researcher prioritize to address.

In more recent times, several studies and reforms put forward by the scholars to address gaps in this area, none of such studies were in-depth coverage. However, this study will help to filled-in to address the missing gaps in providing degree of excellence within the available resources (DKolo, et al., 2022).

However, Cherbon (2016), state ways of using data to determine clinical interventions are; identify root cause of data quality, identify opportunities for improvement, and develop aim statement for clinical intervention. Todd, (2018) affirm that take action and test—to improve data quality using DPITT, help clinicians getting latest and greatest evidence-based and best life-saving practices at their fingertips.

Kamaliah and Chloe, (2017), state key insights of data measurement and use thus; firstly, the most pressing challenge is technical skills to translate data into information and knowledge to resist the introduction of new technologies into existing processes. Health care professionals need to go beyond inter-operability of data sources from different technology platforms, rather; supports decision-making to rebuild systems of data collection, culture for data demands and use.

Secondly, effective data analysis and visualization, it's not just knowing key stakeholders to selects right data to make decisions that matters, but to understand the motive of audience and make data managers to resend useful and impactful data that drive for action.

Thirdly, evidence-base of right data sources, decision making should not only depend on data, but to build a culture of data demand, so that data use for decision becomes institutionalized in the system. Implementers are now left to find perimeters to measure and influence processes. Though, this involves critical steps that require time and commitment of an inspired leader, enabling environment and accountability mechanisms at all levels.

Lastly, HMIS incorporates highest quality data element for tracking facility performance, since quality data allows clinicians and policy drivers informed decision to improve quality of care, partners; WHO, UNICEF, NSAID, insurance companies & third-parties' payers are now more than ever, closely examining PHCFs to ensure data provides are of error-free, accurately represent their performance and receive maximum reimbursements.

Therefore, in addressing the identified gaps, data from wide range of source should be properly document, monitor, and analyze, instead of archived data at various repositories (Kamaliah & Chloe, 2017). Similarly, to also formulate strategies of continue strengthen ways of

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measuring PHCS with comparative benchmarking—using global indicator, strengths, weaknesses and exchange experiences; includes integration of US and Europe methods of Medical Intelligence and Surveillance (MIS) into Niger state and Nigerian PHC system (Menizibeya, 2011) to have right information—for better performance—and strength PHC of modern era (Kamaliah & Chloe, 2017).

Purpose of the study

The broad aim of this study is to assess the influence of HMIS in the performance of PHC service in Niger State, Nigeria. The specific objectives are to:

1. Assess HMIS in the performance of PHC services in Niger State.
2. Determine the level of the performance of PHC services in Niger State.

Research questions and hypothesis are structured corresponding to the research objectives.

Research Methodology

The study set in Niger state, and adopted descriptive-cross sectional quantitative research method. HCW's, of various cadre working in PHCFs of Niger state are the targeted population to this study. The available data has shown 6,534 as population sizes of HCP working in PHCFs of Niger state (NSPHCDA-DPRS, feb.8, 2021). The researcher draws 363 HCP from PHCFs as sample size to participate in the study using Krejcie & Morgan Table (1970) to determine sample size for easy reference cited in (DKolo et al, 2022).

However, HCW's working at PHCFs of the selected LGAs within three GPZ of Niger state are the inclusion, while those declines the consent, on leave, ill-health or otherwise absents during survey are excluded (DKolo et al, 2022).

The researcher adopts multi stage sampling techniques thus; First stage, LGA and PHCFs are classified based on their geo-political zones (GPZ) A, B & C respectively. Second stage, simple random sampling technique was used to select three (3) LGA from each GPZ. Third stage; proportionate stratified random sampling method was used to recruit 363 subjects as sample size with available data showing 6,534 as population of HCW in PHCFs of Niger state. This was calculate using formula; (sample size / population size) x stratum size (Krejcie & Morgan table, 1970: NSPHCDA-DPRS, feb.8, 2021). Fourth stage; surveys were conducted in 212 PHCFs of 414 functional public PHCFs of the nine selected LGAs in Niger state, applied same proportionate stratified random sampling method (dhis2, version 2019: Krejcie & Morgan table, 1970). Final stage; convenience (Accidental, opportunity or Grab) sampling method was used to administer questionnaires to the subjects who give consent at functional public PHCFs of the selected LGAs respectively.

Structured questionnaires were adapted as instrument for this research, covers standard domains used in US and Lebanon surveys by other authors used in similar studies (Elkhalil, 2017; Faizan, 2018). The instrument is divided into sections. Section A elicited the demographic profile of the respondents. Section B gathered data on the availability of health care personnel in the state, measured by right items. Section C is on HMIS and level of the performance of PHC services in Niger State measured by five items. All items are formatted based on five-point Liker rating pattern t scale domain thus; A: Agreed, SA: Strongly agreed, N: neutral, DA: Disagreed SDA: Strongly disagreed respectively.

The researcher leads the team on data collecting process. Research assistants or data collectors (surveyors) are trained, who visit the three sampled/selected LGA PHCDA's under each senatorial

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Variables	Mean	SD	R	Sig.
Health Management Information System	**17.16**	**4.73**	**.765**	**<.001**
Performance of Primary Health care Services	**61.02**	**14.07**		

district in the state to assist researcher in follow up, ensure adherence and address gaps until copies of the questionnaire are administered and ensure the sample size is achieved and returning of the questionnaire. The recruitment processes last for a week (DKolo, 2022). Ethical considerations were adhered to in the process of data collection. The data collected were analyzed using both descriptive and inferential statistical tests of One-sample t-tests in testing the null hypotheses.

Data Analysis and Presentation

A total of 363 copies of the questionnaire were distributed across the study areas in various PHCFs setting. Three hundred and fifteen (315) were duly completed and verified, representing 87% of the total no. of the questionnaire distributed, collected and were used for data analysis. The variables are measured based the questionnaire items. The respondents' scores on the scale were summed-up and multiplied 3.00. For the variables to be considered significantly adequate or high, the scores made on the scale most be significantly higher/greater (which is the midpoint between strongly agree and strongly disagree). The null hypotheses are tested with Pearson correlation coefficient between Satisfaction with Life and other variables as well as a one-sample t-test otherwise called (population t-test).

First Hypothesis: There is no significant relationship between HMIS and Performance of PHC services in Niger State.

Table 1.01:

Pearson correlation coefficient between Satisfaction with Life and other variables

In testing this hypothesis, the Pearson Product Moment Correlation Coefficient technique was utilized in determining the relationship between HMIS and Performance of PHC services. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Cohen's (1988) in Boset, et al., (2017) classification of correlation strength has been used in the present study. Cohen (1988) suggested that a correlation is considered small/weak when r= .10 to .29, medium/moderate when r = .30 to .49 and large/strong when r = .50 to 1.00. The results in Table 1.01 reveals a strong and positive non-significant relationship between HMIS and Performance of PHC services in Niger State r (313) = .765, p < .001. This means that as HMIS practices increase, there will be a corresponding increase in the Performance of PHC services in Niger State.

Second Hypothesis: The level of Performance of PHC services will not be significantly high in Niger State.

Table 2.01:

One sample t-test analysis on level of Performance of PHC services in Niger State

Sub-scales	Sample Mean	Sample SD	Ref. t-value	T	Sig.	Remark
1. Performance of PHC services	61.02	14.07	54	8.85	<.001	S
2.Performance items	13.60	3.66	15	8.54	<.001	S
3 Quality Performance	13.60	3.65	12	7.78	<.001	S
4.Working Environment	10.34	3.04	9	7.81	<.001	S

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5.Safety Needs	9.99	2.85	9	6.17	<.001	S
6. PHC Funding	10.05	2.62	9	7.14	<.001	S

In testing the sixth null hypothesis, the variable of interest is the level of Performance of PHC services as a whole and it sub-scale components, measured by different questionnaire items. The level of Performance of PHC services is wholly measured by 18 items, while other sub-variables are measured by items ranging from 3 to 5 items each.

The results presented in Table 2.1, a critical look reveals that when the level of Performance of PHC services was computed, the results indicate a statistically significant high level of Performance of PHC services among the respondents in Niger State ($M=61.02$, $SD= 14.07$), $t(314) = 8.85$, $p < .001$. The magnitude of difference in the mean (mean difference = 7.02), 95% CL: 5.46 to 8.58) was very large (eta squared = 0.19). Similarly, individual sub-scales measuring the different sub-scales of levels of Performance of PHC services such as PHC funding etc. reveals a statistically significant high level among the respondents in Niger state. With these results, the sixth hypothesis is hereby not supported and hence rejected for alternative. This implies that the level of Performance of PHC services is significantly high among the respondents in Niger state, Nigeria.

Discussion of findings

The first finding to this study clearly concluded that majority of the respondents agreed on the construct that measured HMIS and reveals HMIS practices increase, with a corresponding increase in the performance of PHC services in Niger State, this affirms with studies of NSPHCDA as a data driven organization operates on global HMIS that eases data transmission process, tracking, repositories and action taken to improve data quality for better health outcome. Though, the system is faced with critical challenges limiting state ability to have a comprehensive data. (Kamaliah & Chloe, 2017).

While the second finding of the study implies the level of performance of PHC services is significantly high and as the two predictors, made significant contribution in the prediction of performance of PHC services in Niger state. This is because numerous studies focus to addresses emerging challenges in terms of policy guides and mechanism (Leonie &Tom, 2009), with emphasis to strength ways of measuring PHC performance using global indicator sets (Kamaliah & Chloe, 2017), ensuring data from various sources address emerging issues and informed decisions for strategies and service improvement (Battani & Zywiak, 2015).

Conclusion

In recent era, as increasingly proceed on innovation, reforms, strategies in PHC setting, these necessitates to embrace data-powered information technology tools (DPITT) to routinely monitor data from right source, timely and accurately from a wide range at all levels of healthcare (Endriyas, et al, 2019). These emerged in shaping the processes, production and in norm that put the needs for computerized information, monitoring and evaluating the process to improve data quality of modern era (Kamaliah & Chloe, 2017., Todd, 2018., & Asamani et al., 2018).

This research is thrust to address the gaps, with focus on HCPA, attitude of HCW towards PHC services in Niger state with in-depth review of related literatures and theories of scholars. Thus; addresses emerging challenges on FIPPHCS in terms of policy guides and mechanism (Leonie

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&Tom, 2009). These calls for hope, truth and social-just message to the clients', employers and employee's (Obama, 2004), alleviating burnout rate with reward and recognition strategies to increase care providers job satisfaction.

Recommendations

With increasingly demand of ideal team-design, and barriers to implement ideal quality medical services in addressing FIPPHCS. The researcher hereby proffers the following recommendations;

1. A call to state government and all stakeholders alike, for a continue strengthen ways of measuring services performance with comparative benchmarking—using global indicator and integration of US and Europe methods of Medical Intelligence and Surveillance (MIS) into Niger state and Nigerian PHC system (Menizibeya, 2011) to have right information—for better performance—and strength PHC of modern era (Kamaliah & Chloe, 2017).
2. Finally, the researcher calls for a more research on the same topic, and skills require to rebuild HCW's and redesign programs direction to improve nation's PHC services.

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