

Differences in Knowledge and Practice of Health Information Management among Health Care Managers in Urban and Rural Districts of Ghana: A Comparative Study

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Abstract. Health care managers in urban settings have a greater advantage over their rural counterparts when it comes to the needed essential training and logistics such as access to constant information technology and communication media to ensure effective health information management among health facilities. This assumption perceived health care managers in urban settings to have adequate knowledge and practice of health information management compared to their rural counterparts. This study, compared means scores of knowledge and practice of health information management among rural and urban health care managers in 67 conveniently selected government health facilities from 1st February to 10th March 2022 in the Ashanti region of Ghana. The study consisted of 37 (55.2%) urban and 30 (44.8%) rural managers of government health facilities (N= 67). Adequate health information management knowledge levels for rural and urban settings were 36.7% and 34.3% respectively. The level of adherence to good health information management practices for rural and urban were 53.3% and 43.2% respectively. The study revealed no statistical difference in the mean scores for knowledge $t(65) = -0.08, p = 0.94$ and practice $t(65) = -0.59, p = 0.56$ of health information management between rural and urban settings. Continuous capacity building tailored to health information management is paramount to ensure adequate knowledge and practice to improve health information practice among health facility managers in both rural and urban settings.

Keywords: health information management, Offinso North, Asokore Mampong, Ashanti Region, Data Management, Rural, Urban

I. INTRODUCTION

Health data management is mostly judged by some health care professionals as a mechanism for only collecting information and transmitting it routinely or periodically to the higher levels paying little to no attention to its use at the level generation for effective decisions (3). Health data management in a broader perspective encompasses routine and periodic patients or health events data; collection, storage (using online or local storage devices), validation (to ensure

data accuracy), collation and transmission, analysis and prompt feedback dissemination as enshrined in the Ghana Health Service Standard Operating Procedures (SOPs) for health information management (1). These activities form part of the larger component of Health Information Systems (2) hence making adequate health information management an essential catalyst for increasing the efficiency of decisions made to improve health service delivery (4), (5), (6). Strengthening health information management at both lower and higher levels is requisite for rural and urban settings and requires the inclusion of Information Technology to ensure efficiency.

Even though capacity building coupled with adequate logistics are equally distributed to both rural and urban settings to help improve health information management, some research still affirms the urban superiority over rural settings when it comes to health information management knowledge and practice as a result of the perceived vast gap in Information Technology advancement which favours urban settings for the adequate management of health information (7) (8).

Similarly, in Ghana, health information management is gradually moving from the paper-based era to the new ruling era of Information Technology and Communication application leading to the approval and use of a web-database application called District Health Information Systems 2 (DHIS 2) in 2012 by the Ghana Health Service (9). With this new directive of health information management, every health facility in Ghana is mandated to manage its routine clients' health data with this web-based system to ensure uniformity in reporting health service data and by also enduring adequate data security and storage (2).

Notwithstanding, the lack of constant telecommunication network and internet connectivity coupled with inadequate human resource capacity in the rural setting, has made quality health information management a difficult task to achieve.

Furthermore, most rural settings lack secondary health facilities such as hospitals and specialized health facilities. Even though some periodic training on health information management includes health care facilities from the rural settings, a reasonable number of routine capacity building for staff on health information management carried out for most secondary and tertiary health facilities under the jurisdiction of the Ghana Health Service normally exclude these rural settings without secondary health facilities. Therefore, knowledge and practice levels of health information management in rural and urban settings are normally expected to differ. Somewhat, diminutive information is known about knowledge and practice of health information management among rural and urban health managers (7) in Ghana with no research being done on this assessment in the current study settings. This study, therefore, assessed the differences in knowledge and practice of health information management among rural and urban health facility managers in selected districts in Ghana.

II. MATERIALS AND METHODS

Study site description

This study was conducted in sixty-seven (67) government-owned health facilities in Asokore Mampong (urban) and Offinso North (rural) Districts in the Ashanti Region of Ghana. The urban and rural districts have a projected population of 191,402 and 83,440 with 41 and 27 government health facilities respectively. These facilities are made up of hospitals, health centres, CHPS compounds and CHPS zones in these selected rural and urban districts in the Ashanti Region of Ghana.

Study design

A comparative study was conducted to collect primary data to assess differences in mean scores of knowledge and practice of health information management among rural and urban managers of government health facilities.

Sampling method

A total of sixty-seven (67) government health facilities were conveniently selected from a rural district (Offinso North) and an urban district (Asokore Mampong) in the Ashanti region. All managers of these health facilities from the two selected districts were purposively included in the study.

Data collection procedure

The study employed a structured questionnaire with closed-ended questions to elicit data from all 67 respondents from 1st February to 10th March 2022. The questionnaire was categorized into three (3) main sections namely: **socio-demographics of respondents** which consisted of sex, age, educational level, district type and the number of years worked; **knowledge of health information management** which consisted of eleven (11) questions focused on HIM, DHIMS, routine service data capture and collation, health facility activity reporting, managers' report reviews and

endorsement or certification, data validation teams and meetings, data request certification and data transmission guidelines; and **practice of health information management** which consisted of ten (10) questions focused around DHIMS account ownership, DHIMS 2 database usage, data validation setup and meetings, manual and electronic data transmissions, data analysis for decision making, data analysis output displayed and data management supervision and monitoring. The questions were almost entirely formulated by the researchers due to the scarcity of publication on a similar study. However, few of the questions were adopted and modified from the literature. To ensure the validity of the questionnaire, a pre-test was conducted on 10 health facilities managers in different health facilities with similar characteristics as the study sites sampled for this study. The study used a researcher administered questionnaire approach to elicit information from respondents. The questions were constructed and administered in the English Language.

Data analysis

The study compared the means of knowledge and practice scores among rural and urban health facilities managers with these non-directional assumptions;

Hypothesis for knowledge scores

Null Hypotheses

$$H_0: \mu K_R - \mu K_U = 0$$

There is no difference between the knowledge of health information management among government health facilities managers in urban and rural districts.

Alternative Hypotheses

$$H_1: \mu K_R - \mu K_U \neq 0$$

There is a difference between the knowledge of health information management among government health facilities managers in urban and rural districts.

Hypothesis for Practice scores

Null Hypotheses

$$H_0: \mu P_R - \mu P_U = 0$$

There is no difference between the practice of health information management among government health facilities managers in urban and rural districts.

Alternative Hypotheses

$$H_1: \mu P_R - \mu P_U \neq 0$$

There is a difference between the practice of health information management among government health facilities managers in urban and rural districts.

Keys: H_0 = Null hypothesis, H_1 = Alternative hypothesis, μK_R = mean knowledge of health information management among rural managers, μK_U = mean knowledge of health information

management among urban managers, μ_{PR} = mean practice of health information management among rural managers, μ_{PU} = mean practice of health information management among urban managers.

Data from the interview were first entered into Epi Info version 7 developed by the Centers for Disease Control and Prevention. Data cleaning and quality checks were performed before the data entry. The cleaned data were then exported and analysed using Statistical Package for the Social Sciences (SPSS) version 20 (IBM, Armonk, NY, USA). The socio-demographic data of the respondents were analysed descriptively. The questions on knowledge and practice of health information were scored one (1) point and (0) zero points for the correct and wrong answers respectively. Subsequently, the individual total scores and the mean scores for the eleven (11) questions on knowledge and ten (10) questions on practice were computed separately. To compare the means of knowledge and practice among rural and urban health facilities managers, an independent sample t-test was performed taking into consideration the above-stated assumptions for both knowledge and practice scores. Statistical significance was determined at a 95% confident level (P-value ≤ 0.05).

III. RESULTS AND DISCUSSION

Respondents socio-demographics

The study consisted of 37 (55.2%) urban and 30 (44.8%) rural managers of government health posts (N= 67). Most of the respondents were men (58.2%) with the highest educational levels attained ranging from a certificate (26.7%) to a master’s degree (3.3%) respectively. The respondents for this current study as a whole were relatively adults ($M = 33.22$, $SD = 4.33$). The majority of the respondents had worked between 5 to 10 years (37.3%) as depicted in Table 1.

Table 1 Respondents’ Socio-Demographics

Demographic Variables	District Type n=67(%)		
	Rural	Urban	Total
Sex			
Female	10 (33.3)	18 (48.6)	28 (41.8)
Male	20 (66.7)	19 (51.4)	39 (58.2)
Education level			
Certificate	8 (26.7)	5 (13.5)	13 (19.4)
Degree	9 (30.0)	15 (40.5)	24 (35.8)
Diploma	12 (40.0)	13 (35.1)	25 (37.3)
Masters	1 (3.3)	4 (10.8)	5 (7.5)
Age group			
25-29yrs	6 (20.0)	9 (24.3)	15 (22.4)
30-34yrs	15 (50.0)	13 (35.1)	28 (41.8)
35-39yrs	5 (16.7)	12 (32.4)	17 (25.4)
40-44yrs	4 (13.3)	3 (8.1)	7 (10.4)

No. of years worked			
<5yrs	9 (30.0)	13 (35.1)	22 (32.8)
5-10yrs	15 (50.0)	10 (27.0)	25 (37.3)
>10yrs	6 (20.0)	14 (37.8)	20 (29.9)

n=number of respondents

Table 2 Knowledge And Practice Levels Among Rural And Urban Districts

Variables	Rural	Urban	X ²	p-value
Knowledge Level n=67(%)				
Adequate	11(36.7%)	12(32.4)	0.132	0.798
Inadequate	19(63.3)	25(67.6)		
Practice Level				
Good	16(53.3)	16(43.2)	0.676	0.47
Bad	14(46.7)	21(56.8)		

X² = Pearson Chi-Square value, n= number of respondents

In this study, adequate health information management knowledge levels for rural and urban settings were 36.7% and 34.3% respectively. This achievement is low and requires adequate training tailored to the importance and standard operative procedures on health information management for health facility managers should be a requisite intervention (2), (10). The level of good health information management practice for rural and urban were 53.3% and 43.2% respectively which is deemed as not encouraging in both settings. This finding conforms to a study conducted in Ethiopia which opined that health data management practice was inadequate among respondents studied (1). In this present study, a chi-square test of independence showed that there was no significant influence of setting type on knowledge of health information management among respondents, $X^2(1, N = 67) = 0.13$, $p = 0.80$. Subsequently, this study revealed that, setting types of respondents had no influence on their health information management practice, $X^2(1, N = 67) = 0.70$, $p = 0.47$. The current findings contradict a study done in the United States and Ethiopia which documented that rural settings are less likely to practice health information management (11), (8), (12). This contrast could be attributed to the different methodology and scope of study used in these distinct settings.

Compared means of knowledge and practice of health information management among health care managers.

The descriptive statistics for the difference in knowledge and practice of health information management among urban and rural government health facilities management members revealed a knowledge mean score of 9.10 (SD = 1.0) and 9.08 (SD = 0.95) among rural and urban respondents respectively as illustrated in Table 3. The average score for practice were 6.43 (SD = 2.66) and 6.05 (SD = 2.58) among rural and urban respondents respectively. However, the overall mean score for knowledge and practice of health information management among the health facilities managers interviewed in both

urban and rural districts was 9.09 (SD = 0.97) and 6.22 (SD = 2.60). The independent sample t-test performed revealed a satisfied homogeneity of variance using Levene's Test for Equality of Variances for knowledge level $F(65) = 0.06$, $p = 0.80$ and practice level $F(65) = 0.96$, $p = 0.76$ among rural and urban government health facility managers. There was no statistical difference in mean score for knowledge $t(65) = -0.08$, $p = 0.94$ and practice mean scores $t(65) = -0.59$, $p = 0.56$ on health information management among rural and

urban government health facilities managers at 95% confidence interval ($p = 0.05$) as shown in Table 3. This finding could be ascribed to the periodic capacity building modules on health information management (1) allotted to both settings by the higher levels. Though lack of some necessities could hinder knowledge and practice of health information management in rural settings compared with their urban counterparts, its current finding does not conform to a study conducted in Ethiopia (13).

Table 3 Respondents' Socio-Demographics

Variables	N	Mean	Std. Deviation	F	Sig.	t	df	Sig. (2-tailed)	Decision	
Knowledge Level										
District type	Urban	37	9.08	0.95	0.06	0.8	-0.08	65	0.94	Fail to reject the null hypothesis
	Rural	30	9.10	0.99						
Practice Level										
District type	Urban	37	6.05	2.581	0.10	0.76	-0.59	65	0.56	Fail to reject the null hypothesis
	Rural	30	6.43	2.661						

IV. CONCLUSIONS AND RECOMMENDATIONS

Though many researchers perceived urban settings to pose adequate knowledge and good practice of health information management over their rural counterparts as a result of their advancement in information technology, this study revealed no influence of setting type on knowledge and practice of health information management. Furthermore, adequate knowledge and practice levels of health information management in both urban and rural settings were very low which warrants regular and health manager tailored capacity building to improve knowledge and practice. Further research to elicit reasons for low knowledge and practice levels is paramount.

ACKNOWLEDGEMENT

We are grateful to all respondents and the District Health Management Teams of the two districts for permitting us to undertake this study in their districts.

Limitation

The close-ended structured questionnaire employed limited respondents to give more insight into their knowledge and practices concerning health information management. This might not reflect the true situation on the ground.

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