# Knowledge, Attitude and Practice of Health Information Management Among Health Managers in Government Health Facilities in Ghana: A Cross-Sectional Study

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**Abstract:** A proper health information management system goes a long way to effectively influence data-driven decision making to improve health delivery. Despite dedicating enormous resources to adequately manage health information in the health systems, health facility managers who are the main custodians of this information at the facility levels pay little or no attention to the management of this information. This study therefore aimed at assessing the knowledge, attitude and practice of health information management among health facility managers in government health facilities. An institutional-based descriptive cross-sectional study was conducted from 1st February to 10th March 2022 in 68 purposively selected government health facilities in the Ashanti Region of Ghana. A pretested researcher-administered structured questionnaire was used to elicit quantitative data from health facility managers. Epi Info version 7 and STATA version 13 were used for data entry, cleaning and analysis respectively. Univariate descriptive statistics were computed. Fisher's exact Binary logistic regression analysis was done to identify factors influencing knowledge, attitude and practice levels. An odd ratio at a 95% confidence level was used to describe the strength of the association. The overall adequate knowledge score was 34.3% with a mean score of 9.09±0.97. Good attitude and practice scores were 41.8% and 47.8% with mean scores of 3.01±1.04 and 6.22±2.60 respectively. Adequate knowledge among respondents who were 30 years and above was 10 times more compared to respondents whose ages were below the 30 years (95%CI (10.00,4.53.45), p = 0.016). Respondents who had worked for 5 years or more were more likely to have adequate knowledge of health information management compared to the respondents who have worked for less than 5 years (COR = 4.96 [95%CI (1.20,29.83)], p = 0.022). Sex, educational level, and respondents' specialty were not statistically significant with the health information management knowledge level. All socio-demographics used in the multivariate analysis were not statistically significant with attitude and practice level of health information management among respondents. Knowledge, attitude and practice level of health information management were found to be very poor among health facility managers. Capacity building tailored towards health facility managers would help ensure effective supervision and monitoring of routine health information management. Future research would be needed to explore the reason behind the poor level of health managers' knowledge, attitude and practice of health information management.

## 1. Introduction

Carla Hayden, the first African American and the 14th Librarian of Congress once said, "Health information is just about the number one thing that people go into public libraries and connect to public libraries for". She further retreated that these people also look for health information about things that can make their lives better. [1]. This famous quote affirms that health information is vital in ensuring improved health for the individuals who are adjudged the most essential component when it comes to the benefits of information.

According to American Health Information Management Association (AHIMA); "Health Information Management (HIM) is the practice of acquiring, analysing, and protecting digital and traditional medical information vital to providing quality patient care" [2]. Health data on the various essential health services provided are documented during service delivery [3] and are collated either routinely or periodically which are used for planning and managing health services to ensure effective and efficient health care delivery. After data are collected, they need to be processed, checked for quality, and transmitted up to higher levels. Notwithstanding, data collated from routine or periodic health care services should be analysed at the level of data collection to enable informed decisions to be made on programs' progress and achievements [4]. Analysing data at the point or level of generation signifies a paradigm shift from mere reporting to asking strategic questions such as; are programs making progress toward implementing plans and achieving their goals and targets? are resources adequate to achieve program objectives? [5].

Though analysing one's data is very paramount, few developing countries have strong and effective health information systems to permit adequate monitoring of progress towards the United Nations Sustainable Development Goals (SDGs). Most countries that are in need of such reliable and timely information usually lack this information attributing it to poor systems for data collection, analysis, dissemination and use. Nevertheless, data available in most developing countries are often outdated which makes an assessment of trends of most indicators even more problematic for decision-makers. [3]. Health facility managers are responsible for the in-flows and out-flows of health data and information and are the prime custodians of these data generated from their various jurisdictions [2]. Essentially, health facility managers with well-vested knowledge, attitude and practice of health information management are likely to oversee all activities of data management in their facility, which will surely incorporate a sense of responsibility in their actions concerning health information management [5].

In Ghana, the main system for capturing, reporting and analysing health service data for decision making is the District Health Information System 2, a web database designed in 2006 by the University of Oslo. [6]. This system has been in use by Ghana Health Service since 2012 and all health facilities operating in Ghana are mandated to report service data through this system as part of their health information management processes. Though openly assessed by most facilities across the country, reporting into the DHIMS 2 by health facilities has not been encouraging. The overall report completeness and timeliness for selected maternal, child, adolescent and clinical datasets or reports in DHIMS 2 for the 2021 reporting year were 81.1% and 71.6% respectively for the two Districts sampled for this study. These achievements were below the Ashanti Regional achievements of 88.7% and 75.5% for report completeness and timeliness in DHIMS 2 which is also adjudged to be very low considering the National target of 96% as enshrined in the holistic assessment indicators for the Ghana Health Service in 2021 [7]. The founder and research scientist at 'Notonlab company in Kenya, Nudi Levit once said, "Information in itself is not powerful, power lies at the core of being informed and making good use of it" [1]. Clearly, in these two Districts selected for this study, health information management is a challenge causing erratic and delays in reporting health service data which forms the basis for data analysis for data-based decision making to improve health care delivery. The issue of not being able to make health information management a priority among health facility managers is not only tied to financial limitations but also to the theoretically and technically complex nature of health information management know-how which requires adequate knowledge and expertise coupled with a well-founded attitude and practice. [3].

Addressing these knowledge, attitude and practice gaps will go a long way to reduce if not eliminate the menaces caused by these gaps in health information management. Very few studies have been conducted to assess the knowledge, attitude and practice of health information management and these researches concentrated much on the health care providers with none paying attention specifically to health facility managers. This study, therefore, sought to assess the knowledge, attitude and practice of health information management among health facility managers in selected government health facilities in the Ashanti Region of Ghana.

## 2. Materials and Methods

### 2.1. Study Site Description

This study was conducted in Offinso North District (rural setting) and Asokore Mampong Municipal (urban setting) in the Ashanti region of Ghana. The rural district and the urban district have a projected population of 83,440 and 191,402 respectively as projected from the 2010 housing and population census conducted in Ghana. Offinso North district has five (5) health demarcated sub-districts and about 27 government health facilities comprising four (4) health centres and twenty-two (22) CHPS zones. It is about 100.6 km from Kumasi, the capital of

the Ashanti Region. Asokore Mampong on the other hand has six (6) health demarcated sub municipals and about forty-one (41) government own health posts comprising six (6) health centres and Thirty-five (35) CHPS zones. Asokore Mampong is about 11.2 km from the regional capital of the Ashanti. These government health posts are managed by various health staff with clinical and public health backgrounds and are mandated to report all service data into the DHIMS 2 software for further analysis and decision making.

### 2.2. Study Design

An institutional-based descriptive cross-sectional study was conducted from 1st February to 10th March 2022 in all government health facilities in Asokore Mampong Municipal and Offinso North District.

### 2.3. Study Population

The study population consisted of managers in government health facilities located in the Offinso North and Asokore Mampong Districts of the Ashanti Region.

### 2.4. Inclusion Criteria and Exclusion Criteria

All government health facility managers who were substantive or acting as the head of the facility or zone at the time of data collection were included in the study. All government health facility managers who were substantive or acting as the head of the facility or zone at the time of data collection but opted out of the study were excluded from the study.

### 2.5. Sample Size Determination

A total of sixty-eight (68) health facility managers in the selected sixty-seven selected government health facilities were used for this current study.

### 2.6. Sampling Method

The study purposively included all sixty-eight (68) government health facilities and their managers from the two selected districts in the study.

### 2.7. Data Collection Procedure

A pretested researcher-administered structured questionnaire was used to elicit quantitative information on knowledge, attitude and practice of health information management among health facility managers from 1st February to 10th March 2022. The questionnaire was sectioned into four parts with the first section looking at socio-demographics which consisted of five variables. The second section captured the knowledge on health information management which consisted of eleven variables with mostly ´yes´ or ´no´ as options. The third section captured the attitude of health information management with four variables respectively with ´agreed´ or ´do not agree´ as options to select. The last section dealt with the practice of health information management with ten variables which had ´yes´ or ´no´ as options. The questionnaire was designed and administered in

the English Language.

### 2.8. Data Analysis

The data obtained from the administered questionnaire were manually scrutinized for missing and misplaced answers to ensure the completeness of the data. The data was then entered into Epi Info version 7 and cleaned for quality and later exported as a Microsoft Excel file into STATA version 13 for further analysis. Univariate descriptive analysis was performed on the socio-demographic variables such as level of education, the number of years worked and sex which were presented as frequencies and percentages. Mean and standard deviations were used to express summary statistics of the age of respondents and knowledge, attitude and practice levels. All correct answers from the various sections (knowledge, attitude and practice) were scored one (1) point whilst incorrect answers were scored zero (0) points. The total correct score for all participants was computed for the knowledge, attitude and practice sections under a new variable. The mean score for knowledge, attitude and practice were 9.09±0.97, 3.01±1.04 and 6.22±2.60 respectively. By this descriptive presentation, new variables were computed for knowledge, attitude and practice levels. All respondents whose total score was equal to or more than the average score for knowledge were assigned "adequate knowledge" whilst a total score which was less than the average score was assigned "inadequate knowledge". Respondents who attained a total score more or equal to the average score for attitude were assigned "good attitude" whilst the total score less than 3.01±1.04 was assigned "poor attitude". Furthermore, a total score of 6.22±2.60 or more was assigned "good practice" whilst a total score of less than 6.22±2.60 was assigned "poor practice" under the practice section. The correct answers and the various recoded binary variables for knowledge, attitude and practice were duly expressed as frequencies and percentages and presented in tables with their respective minimum and maximum scores, average and standard deviations for the new binary variables. Fisher's exact Binary logistic regression analysis test was used to identify factors influencing the dependent variables (knowledge, attitude and practice levels) where crude odds ratio and 95% confidence interval were used as point and interval estimates of the effects of the independent variables (socio-demographic) in the logistic regression model. A probability value of equal to or less than 0.05 was considered statistically significant in this study.

## 3. Results

### 3.1. Socio-demographics of Respondents

This current study recorded a response rate of almost 99% (67 respondents consented to the study out of the 68 expected). The mean age of respondents was 33.2±4.3 years with the majority (41.8%) of them being between the ages of 30 and 34 years. The study revealed a male majority (58.2%) with most of the respondents attaining a diploma (37.5%) as their highest educational level with 7.5% minority attaining masters'

degrees. Respondents with a Public Health background were more (65.7%) than their counterparts with Clinical background (34.3%). More than a quarter of the respondents had worked between 5 and 10 years as illustrated in Table 1.

*Table 1. Respondents' Socio-demographics characteristics.*

| Socio-demographic variables | n=67 | |
|---|---|---|
| Age | | |
| | Mean ± Standard Deviation | |
| Mean | 33.2±4.3 years | |
| Min | 26 | |
| Maximum | 44 | |
| | Frequency | Percentage (%) |
| Sex | | |
| Female | 28 | 41.8 |
| Male | 39 | 58.2 |
| Highest Education Level | | |
| Certificate | 13 | 19.4 |
| Degree | 24 | 35.8 |
| Diploma | 25 | 37.3 |
| Masters | 5 | 7.5 |
| Staff Specialty | | |
| Clinical | 23 | 34.3 |
| Public Health | 44 | 65.7 |
| No. of years worked | | |
| <5yrs | 22 | 32.8 |
| 5-10yrs | 25 | 37.3 |
| >10yrs | 20 | 29.9 |

SD = Standard Deviation, n=number of respondents.

### 3.2. Knowledge of Health Facility Managers on Health Information Management

All health managers (100%) attested to the fact that every health facility is mandated to report to DHIMS 2 but they had diverse ideas when it comes to the standard period to validate their data resulting in 52.2% correct answers even though they agreed (98.5%) that every facility must meet to validate its data. The adequate knowledge score was adjudged to be poor among 44 respondents (34.3%) with a mean score of 9.09±0.97 out of 11. The minimum score was 7 against out of the 11 expected as depicted in Table 2.

*Table 2. Health information management knowledge among health facility managers.*

| Variables | n=67 (%) |
|---|---|
| Knowledge of health information management | Correct Answer |
| HIM is the collection, analysis, storage and protection of the quality of patient health information | 64 (95.5) |
| DHIMS2 is HMIS for reporting and analysis at all levels | 66 (98.5) |
| Private/public/CHAG facilities are mandated to report into DHIMS2 | 67 (100.0) |
| Routine service data must not be collated for submission | 54 (80.6) |
| Sublevel activity reports must be submitted to the next quarterly | 40 (59.7) |
| Facility heads must review and endorse collated reports | 67 (100.0) |
| The facility head must set up the data validation team | 65 (97.0) |
| The facility must meet monthly to validate | 66 (98.5) |
| Data requests must not be endorsed by the facility head before release | 53 (79.1)) |
| The standard period for facility data collation and entry | 58 (86.6) |
| The standard period for facility data validation | 35 (52.2) |
| | Mean±SD |
| Mean Score | 9.09±0.97 |
| Min Score | 7 |
| Maximum Score | 11 |
| Overall Knowledge Level | |
| Adequate Knowledge | 23 (34.3) |
| Inadequate Knowledge | 44 (65.7) |

SD = Standard Deviation, n=number of respondents.

### 3.3. Health Facility Managers' Attitudes Towards Health Information Management

Almost all respondents (94.0%) affirmed that reporting to the next level through DHIMS is their duty but only a few (46.3%) managers saw report preparation and submission to the next level as not tedious. The minimum score for attitude towards health information management was 0%. The overall attitude score was adjudged to be poor among 39 respondents

(58.2%) with a mean score of 3.01±1.04 out of 4.

***Table 3.** Health facility managers' attitudes towards health information management.*

| Variables | n=67 (%) |
|---|---|
| Attitude towards health information management | Correct Answer |
| Reporting to the next level is my duty | 63 (94.0) |
| Report preparation and submission are very tedious | 31 (46.3) |
| Hard copy reports submission must not be added to my existing workload | 51 (76.1) |
| Report preparation is time-wasting | 57 (85.1) |
| | Mean±SD |
| Mean Score | 3.01±1.04 |
| Min Score | 0 |
| Maximum Score | 4 |
| Overall Attitude Level | |
| Good Attitude | 28 (41.8) |
| Poor Attitude | 39 (58.2) |

SD = Standard Deviation, n=number of respondents.

## 3.4. Health Information Management Practice Among Health Facility Managers

The majority (97.0%) of respondents had heard of DHIMS with 76.1% of them having credentials to access the web database but only a few (46.3%) had accessed the reporting platform in the previous three months. The majority (71.6%) of respondents claimed they analyse their data for decision making but only a little above half had set up data validation teams. The overall practice score was adjudged to be poor among 35 respondents (52.2%) with a mean score of 6.22±2.60 out of 10. The minimum score was 1 as depicted in Table 4.

***Table 4.** Health facility managers' practice of health information management.*

| Variables | n=67 (%) |
|---|---|
| The practice of health information management | Correct Answer |
| Ever practice on DHIMS2 | 65 (97.0) |
| Have DHIMS 2 account | 52 (76.1) |
| Access DHIMS 2 every month | 48 (71.6) |
| Have setup Data Validation Team | 36 (53.7) |
| Validate data in DHIMS 2 every month | 45 (67.2) |
| Entered reports for the last three months | 31 (46.3) |
| Endorse all collated facility reports | 49 (73.1) |
| Analyse all my data for decision making | 48 (71.6) |
| Have charts from data analysis | 44 (65.7) |
| Supervise the collation of all data | 42 (62.7) |
| | Mean ± Standard Deviation |
| Mean Score | 6.22±2.60 |
| Min Score | 1 |
| Maximum Score | 9 |
| Overall Practice Level | |
| Good Practice | 32 (47.8) |
| Poor Practice | 35 (52.2) |

n=number of respondents.

## 3.5. Factors Influencing Knowledge, Attitude and Practice Levels of HIM Among Health Facility Managers

In the multivariate analysis, a Fisher's exact Binary logistic regression analysis test was carried out to assess the influence of respondents' socio-demographics on health information management knowledge, attitude and practice levels and presented in Table 5. The results show that the odds of adequate knowledge among respondents who were 30 years and above were 10 times the odds among respondents whose ages were below the 30 years (95%CI (10.00,4.53.45), p = 0.016). The study further revealed that respondents who had worked for 5 years or more were more likely to have adequate knowledge in health information management compared to the respondents who have worked for less than 5 years which was statistically significant (COR = 4.96 [95%CI (1.20,29.83)], p = 0.022). Additionally, other factors such as sex, educational level, respondents and staff specialty were found not to have any statistically significant influence on the level of knowledge on health information management. Also in this study, no independent variable (socio-demographics) was found to be statistically significant with attitude and practice level of health information management among respondents.

*Table 5. Factors influencing knowledge, attitude and practice levels of HIM among health facility managers.*

| Variables | Knowledge Level | | | Attitude Level | | | Practice Level | | |
|---|---|---|---|---|---|---|---|---|---|
| | Adequate | Inadequate | COR (95%CI) p-value | Good | Poor | COR (95%CI) p-value | Good | Poor | COR (95%CI) p-value |
| **Sex** | | | | | | | | | |
| Female | 8 (11.9) | 20 (29.9) | 1 (Ref) | 20 (29.9) | 8 (11.9) | 1 (Ref) | 12 (17.9) | 16 (23.9) | 1 (Ref) |
| Male | 15 (22.4) | 24 (35.8) | 1.6 (0.49,5.16) 0.56 | 26 (38.8) | 13 (21) | 1.38 (0.46,4.14) 0.69 | 20 (29.9) | 19 (28.4) | 1.40 (0.48,4.19) 0.67 |
| **Age Groups** | | | | | | | | | |
| <30yrs | 1 (1.5) | 14 (20.9) | 1 (Ref) | 10 (14.9) | 5 (7.5) | 1 (Ref) | 7 (10.4) | 8 (11.9) | 1 (Ref) |
| 30yrs and above | 22 (32.8) | 30 (44.8) | 10.00 (1.33,4.53.45) 0.016* | 36 (53.7) | 16 (23.9) | 2.57 (0.69,10.26) 0.19 | 25 (37.3) | 27 (40.3) | 0.95 (.25,3.49) 1.00 |
| **Highest Education Level** | | | | | | | | | |
| Diploma and below | 11 (16.4) | 27 (40.3) | 1 (Ref) | 25 (37.3) | 13 (19.4) | 1 (Ref) | 15 (22.4) | 23 (34.3) | 1 (Ref) |
| Above Diploma | 12 (17.9) | 17 (25.4) | 1.72 (0.55,5.42) 0.42 | 21 (31.3) | 8 (11.9) | 1.32 (0.44,4.01) 0.76 | 17 (25.4) | 12 (17.9) | 0.47 (.15,1.37) 0.19 |
| **Specialty** | | | | | | | | | |
| Clinical | 7 (10.4) | 16 (23.9) | 1 (Ref) | 13 (19.4) | 10 (11.0) | 1 (Ref) | 10 (14.9) | 13 (19.4) | 1 (Ref) |
| Public Health | 16 (23.9) | 28 (41.8) | 1.30 (0.40,4.57) 0.84 | 33 (49.3) | 11 (16.4) | 0.90 (0.29,2.85) 1.00 | 22 (32.8) | 22 (32.8) | 2.28 (.69,7.65) 0.21 |
| **Years Worked** | | | | | | | | | |
| <5yrs | 3 (4.5) | 19 (28.4) | 1 (Ref) | 15 (22.4) | 7 (10.5) | 1 (Ref) | 11 (16.4) | 11 (16.4) | 1 (Ref) |
| 5yrs or more | 20 (29.9) | 25 (37.3) | 4.96 (1.20,29.83) 0.022* | 31 (46.3) | 14 (20.9) | 1.25 (0.39,3.94) 0.87 | 21 (31.3) | 24 (35.8) | 1.14 (.36,3.59) 1.00 |

COR=Crude Odds Ratio; CI=Confidence Interval; Ref=Reference; *p-value ≤ 0.05.

## 4. Discussion

The present study assessed the knowledge, attitude and practice level of health information management among managers of government health facilities in selected districts. The results of the present study showed that about 34.3% of respondents had adequate knowledge of health information management. This current finding was somewhat lower compared to cross-sectional studies conducted in the Amhara Regional State of Northern Ethiopia and the East Gojjam zone which recorded 49.6% [8] and 47.4% [9] good knowledge scores respectively. A cross-sectional study carried out in the Plateau AND Enugu States of Nigeria recorded 71.5% [10] and 72.7% [11] good knowledge levels respectively which was high compared to the findings realised from this current study. The finding realised in this current study is again lower than cross-sectional studies carried out in Ethiopia and Tanzania which documented about 58.2% [12] and 86% [13] of good knowledge respectively among participants studied. The adequate score for knowledge recorded in this present study is however higher compared to a study conducted in South West State in Nigeria which has a very low (9.7%) knowledge level for data management [14].

These results are not surprising as a little above half (59.7%) of the total managers attested to the fact that sub-level activity reports must be submitted to the next level quarterly even though the majority of the managers confirmed that facility heads must review and endorse collated reports before submission. Furthermore, most of the health information management routine responsibilities have been designated to other staff as their sole responsibility by these health facility managers. This makes it difficult for these facility managers to engage themselves in the in-service training and workshops organised both internally and externally. This low knowledge in health information management could be a major reason for not reporting most service data into the DHIMS 2 database and this can greatly affect health system delivery in these districts [15, 16]. There is a need to build the capacity of facility managers in health information management to reduce the menace of poor health information management [9].

This study further showed a low score (41.8%) of managers with a good attitude level towards health information management in government health facilities. This current finding is comparably lower compared to studies conducted in the Amhara Regional State of Northern Ethiopia, Tanzania and Enugu State in Nigeria which documented a good attitude level of 63.8% (8), 86% [13] and 98.7% [11] respectively. The score for good attitude towards health information management among health facility managers in government health facilities recorded in this current study is however higher compared to a cross-sectional study in Kuwait which recorded a 26.9% good attitude level among participants studied [17]. Good attitude has a strong link with adequate knowledge when it comes to health information [8] subsequently, the high inadequate knowledge recorded in this current study among health facility managers attest to the fact that their attitude towards health information management would not flourish as expected. Hence the reason for the non-coordination of health information management activities in their respective jurisdictions.

The present study showed that the practice level of health information management among health facility managers manning government health facilities was very poor (47.8%).

The finding in the current study is comparably higher than an institutional-based cross-sectional study conducted in the Amhara Regional State of Northern Ethiopia and Kuwait which documented a 28.3% good practice level [8]. and 35.8% [17] good practice levels respectively. Again, the result in this current study is comparably higher than a study done in South West State in Nigeria [14]. However, the current finding is lower compared to an institution based cross-sectional study conducted in the East Gojjam zone, the Enugu State of Nigeria, Ethiopia and Tanzania which documented a good practice score of 53.3% [9], 60% [11], 74.3% [12] and 92% [13] among respondents studied respectively. This poor practice level of health information management among managers manning government health facilities in this current study could be attributed to busy schedules accorded to these managers born out of dual assignments which include the duty as professional staff and the duty as manager of the whole facility.

In the quest to identify the influencers of knowledge, attitude and practice of health information management in this present study, a Fisher's exact binary logistics regression test revealed that respondents who were more than 30 years and above were 10 times more likely to have adequate knowledge compared to the respondents whose ages were below the 30 years. This present study further revealed that respondents who had worked for 5 years or more were about 5 times more likely to have adequate knowledge in health information management compared to the respondents who have worked for less than 5 years. These finding in the present study does not conform to the findings of a cross-sectional study conducted in Plateau State Nigeria which opined that age and duration of practice were found not to have any statistically significant influence on the knowledge of data management [10].

The present study, however, showed no significant influence of sex, educational level, respondents and background type on the level of knowledge on health information management among managers. Furthermore, in this present study, sex, age, number of years worked, educational level, respondents and staff specialty were found not to be statistically significant with attitude and practice level of health information management among respondents. This finding, however, is not consistent with a study conducted in South West State in Nigeria which opined that good data management practice was found to be influenced by staff specialty [14].

## 5. Conclusions

This study assessed the knowledge, attitude and practice level of Health Information Management among health managers in government health facilities. Age and number of years worked were found to influence the knowledge level of health information management in this study. Even though health managers have the mandate to make an informed decision based on data, their knowledge, attitude and practice concerning health information management were not encouraging. Periodic Onsite Training and Supportive Supervision (OTSS) must be conducted for these facilities to improve their health information management systems. Further studies should be conducted to assess factors contributing to the poor performance of health information management knowledge, attitude and practice among these health managers to elicit a holistic approach to addressing health information management challenges in the facilities assessed.

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