Assessment of Knowledge and Practices of Community Health Nurses on Data Quality in the Ho Municipality of Ghana

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Abstract

Background: High data quality provides correct and up-to-date information which is critical to ensure, not only for the maintenance of health care at an optimal level, but also for the provision of high-quality clinical care, continuing health care, clinical and health service research, and planning and management of health systems. For the attainment of achievable improvements in the health sector, good data is core. **Aim/Objective:** To assess the level of knowledge and practices of Community Health Nurses on data quality in the Ho municipality, Ghana. **Methods:** A descriptive cross-sectional study was employed for the study, using a standard Likert scale questionnaire. A census was used to collect 77 Community Health Nurses' information. The statistical software, Epi-Data 3.1 was used to enter the data and exported to STATA 12.0 for the analyses. Chi-square and logistic analyses were performed to establish associations between categorical variables and a p-value of less than 0.05 at 95% significance interval was considered statistically significant. **Results:** Out of the 77 Community Health Nurses studied, 49 (63.64%) had good knowledge on data accuracy, 51 (66.23%) out of the 77 Community Health Nurses studied had poor knowledge on data completeness, and 64 (83.12%) had poor knowledge on data timeliness out of the 77 studied. Also, 16 (20.78%) and 33 (42.86%) of the 77 Community Health Nurses responded there was no designated staff for data quality review and no feedback from the health directorate respectively. Out of the 16 health facilities studied for data quality practices, half (8, 50.00%) had missing values on copies of their previous months' report forms. More so, 10 (62.50%) had no reminders (monthly data submis-

sion itineraries) at the facility level. **Conclusion:** Overall, the general level of knowledge of Community Health Nurses on data quality was poor and their practices for improving data quality at the facility level were woefully inadequate. Therefore, Community Health Nurses need to be given on-job training and proper education on data quality and its dimensions. Also, the health directorate should intensify its continuous supportive supervisory visits at all facilities and feedback should be given to the Community Health Nurses on the data submitted.

1. Introduction

Data quality has become an essential concern in recent years not only because of its importance in promoting high standards of patient care but also because of its impact on government financial plans for the maintenance of health services [1]. According to the World Health Organisation [2], accurate, complete and timely healthcare data play a very pivotal role in the development, maintenance and planning of health care services. Data are said to be of high quality if, they are fit for their intended uses in operations, decision making and planning [2]. This high-quality healthcare data offers potential value for optimizing care delivery, but it is still perceived as a by-product of healthcare delivery, rather than a central asset source for competitive advantages [3]. Quality data, particularly concerning timeliness, completeness and accuracy are needed for a variety of purposes including health sector reviews, planning, programme monitoring, quality improvement and reporting [2] [4]. For this reason, it is critical to have high-quality data on performance in the health sector available routinely [2]. Sound decisions are based on sound data; therefore, it is essential to ensure that the data are of good quality. Health-facility data constitute a primary data source for assessing the performance of the health sector; however, it is characterized by inadequate data completeness, timeliness and quality [5].

In most developing countries including Ghana, the issue of the quality of data generated from the community level or the peripheral level of the health care system and forwarded to the district level to be entered into the electronic systems especially the District Health Information System (DHIMS 2) is a serious problem [11]. This is because the completeness, accuracy and timeliness of data have always been compromised. Even though a data audit team had been established at the various levels especially at the district level which had always put in much effort to assess and improve upon the quality of data at the district level, their efforts had not seen the light of day in recent time [6].

Despite the introduction of several interventions such as Public Health Information System, Electronic Health Records in the healthcare systems to ensure

that the data generated at the facility level are of high quality to produce valid and reliable information for scientific-based decision making, data generated at the facility level do not meet the required data quality standards [7].

Additionally, the Health Management Information System (HMIS) procedure manuals and the HMIS data management curriculum developed by the Ministry of Health are to ensure proper data management at the various facilities in Ghana. It is also to provide sufficient data quality and must be used at all levels and at all times for capacity building [6]. All these mechanisms are developed to ensure that the integrity of the data collected is not compromised. Community Health Nurses at the various health facilities still submit inaccurate, incomplete and late data to the health directorates.

At the various district health directorates in Ghana, a monthly return monitoring chart is used to monitor the timeliness of forms submitted manually at the district level. Furthermore, every district does a routine data validation and verification at the first week of the preceding month to check the accuracy and completeness of forms submitted by the in-charges of the various health facilities [6]. Community Health Nurses in primary healthcare facilities such as community-based health planning services (CHPS) compounds and health centres collect and report data for monitoring and evaluation of diseases and services in the municipality. These data when generated at the facility level by the nurse are collected and reported using the various data reporting formats. These reports are received at the district level, audited and validated by the data audit team and supervisors. The validated data is entered onto the nationwide database, DHIMS 2. The Data audit team is established at the district level to ensure sound and reliable data quality assessment which is vital to obtain the high data quality which enhances users' confidence in public health authorities and their performance [7].

Few studies have been conducted in Ghana on assessing the knowledge and practices of community health nurses on data quality, so it is, therefore, necessary that this study is conducted to give insight into the level of knowledge and what they do to ensure accuracy, completeness and timeliness of data in the Ho municipality.

2. Methods

2.1. Study Site Description

The study was conducted in Ho Municipality of the Volta Region. Ho Municipality is one of the 25 political/administrative districts in the Volta region of Ghana. It is located in the middle zone of the Region. The municipality is the regional capital town. To the north-west, the municipality shares borders with Ho West District, to the east and South-east, with Adaklu-Anyigbe district, and to the north-east, it is bordered by The Republic of Togo [8]. The municipality has five sub municipalities and 117 clear-cut communities. There are 26 health facilities, 4 private and 22 public facilities in the Ho Central Sub-municipality, in-

cluding the Volta Regional Hospital, which serves as the referral centre. The Ghana Health Service is the major care provider at all levels of the health system in the municipality.

The municipality has a total population of about 207,219 with 98,429 males, 108,790 females [8]. Inhabitants are mainly Ewes and a few other ethnic groups such as the Hausa. The Inhabitants are mainly into trading and small-scale business and few are government workers. The Ho Central sub municipality is thus the biggest sub municipality with more than half of the entire population of Ho Municipal.

2.2. Study Population

The study was conducted among Community Health Nurses who work at the various health facilities in the Ho Municipality of the Volta Region, Ghana.

2.3. Inclusion and Exclusion Criteria

The study included only Community Health Nurses who were working in the Ho Municipality and were at post during the data collection. The study however excluded other health workers who were not Community Health Nurses.

2.4. Study Design

A descriptive cross-sectional study design was used for the study, to assess the level of knowledge and practices of the Community Health Nurses on data quality. This type of design was considered useful because it provided a quick snapshot of the nature of the variables of interest for the study. It thus measured things as they were. More so, it provided information on the level of knowledge and practices of the study population. It employed quantitative approaches to obtain data from the respondents. Also, this design was preferred because it was appropriate for the collection of information from a large group and it was relatively inexpensive.

2.5. Sample Size Determination

The total number of Community Health Nurses in the Ho Municipality was 94 as a result, the study by census used the total study population.

2.6. Sampling Method

A census was used for the study to collect information from all the 94 Community Health Nurses in the municipality. This method was appropriate due to the homogeneity nature and size of the study population.

2.7. Data Collection

A Likert scale questionnaire (Likert scale) and an observation checklist were the main data collection tools used in the study. The Likert scale was used to measure knowledge if the health providers. Whiles the observation checklist was used

to measure the practices of data quality by the health providers. The instruments were pre-tested on ten (10) respondents with the same characteristics as the study population in a health facility outside the study area and the necessary corrections made. The final instruments were then administered to the respondents at the various health facilities. The Likert scale questionnaires were self-administered while the checklists were issued at each facility. The data collection was done by the researchers with support from research assistants. Participation was voluntary and each encounter with participants lasted for at least 20 minutes.

2.8. Data Analysis

Data from the study were captured in Epi-Data 3.1 and exported to STATA version 12.0 for the analysis using frequencies/cross-tabulation. The Chi-square test (bivariate) and multivariate (logistic regression) analyses were further performed to assess the associations between the knowledge level and demographic characteristics. A p-value of <0.05 at 95% confidence interval was considered statistically significant. The results were displayed in tables and charts according to the variables studied. These included demographic information of respondents, the level of knowledge of respondents on data accuracy, completeness and timeliness, the association between level of knowledge on data quality and some demographic characteristics, and the practices of Community Health Nurses on data quality at the facility level. Descriptive statistics such as determination of proportion, frequencies, were used in describing the results.

To assess the level of knowledge, a score of 2 was given to a right answer, 1 to a neutral answer and 0 to a wrong answer and a total score of 80% and above was graded as good knowledge, 60% - 79% as satisfactory knowledge and a grade below 60% as poor knowledge. To determine the practices of Community Health Nurses in improving data quality, frequency distribution tables were performed on the various variables on the checklist to determine the percentages of health facilities that put into practice the Ghana Health Service guidelines to ensure data quality.

2.9. Ethical Issues

Ethical clearance was obtained from the Ghana Health Service Ethical Review Committee before the study was carried out with the assistance of the University of Health and Allied Sciences, School of Public Health. However, written permission was obtained for the study from the management of the Ho Municipal Health Directorate before the study was conducted among the Community Health Nurses in the municipality. Furthermore, codes were used to identify them instead of names in the analysis and reporting process. All data collected were protected and access was only limited to the researchers.

Participating in the study was voluntary and participants had the right to refuse to participate or withdraw from the study. There were no direct benefits

for participants in the study and the time spent in answering the questions was risk involved in this study. However, well-trained field health workers conducted the interviews to minimize time spent.

3. Results

3.1. Background of Study Participants

From Table 1, out of the 77 respondents, a greater proportion 64 (83.12%) of the Community Health Nurses were female. The majority 64 (83.12%) of the respondents were within the age group of 26 to 30 years; most 55 (71.43%) of them were married and the majority 73 (94.81%) were Christians. The majority 75 (97.40%) of the respondents had certificates and 2 (2.60%) had a diploma. A greater proportion 29 (37.66%) of the respondents had work experience above 5 years; most 63 (81.82%) of the respondents were not in-charges at their various facilities and the majority 39 (50.65%) of the respondents were from CHPS compounds.

3.2. Level of Knowledge of Community Health Nurses on Data Accuracy

Figure 1 shows that out of the 77 respondents, most 49 (63.64%) of them had good knowledge on data accuracy, 14 (18.18%) and 14 (18.18%) both were who had poor and good knowledge respectively.

3.3. Level of Knowledge of Community Health Nurses on Data Completeness

From Figure 2, out of the 77 Community Health Nurses, more than half 51 (66.23%) of them had poor knowledge on data completeness whilst 22 (28.57%) and 4 (5.19%) represented those who had satisfactory and good knowledge of data completeness.
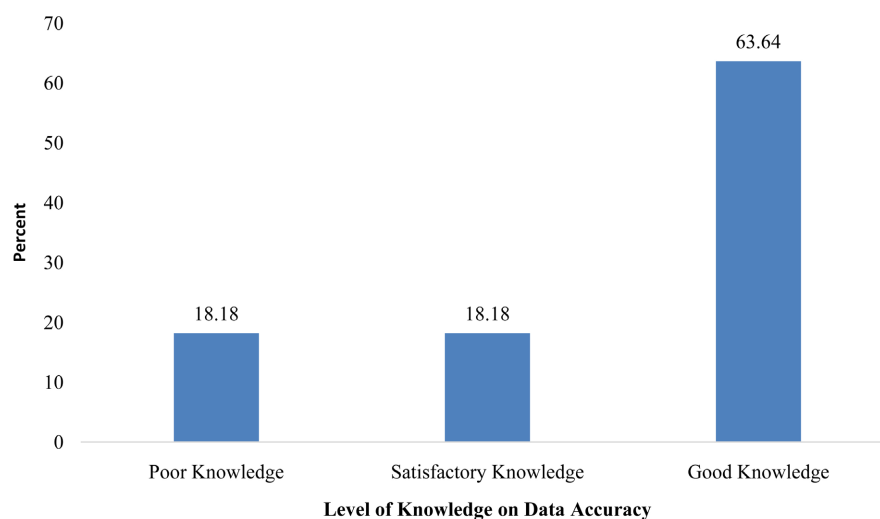

Figure 1. Distribution of level of knowledge of respondents on data accuracy.

Table 1. Demographic characteristics of respondents.

| Variable	Frequency (n = 77)	Percentage (%)
Sex of Respondents		
Male	13	16.88
Female	64	83.12
Age-group of Respondents		
<26 years	4	5.19
26 - 30 years	47	61.04
31 - 35 years	21	27.27
36 - 40 years	2	2.60
>40 years	3	3.90
Marital Status		
Single	20	25.97
Married	55	71.43
Cohabiting	1	1.30
Widowed	1	1.30
Religion		
Christianity	73	94.81
Islamic	3	3.90
Others	1	1.30
Type of Certification		
Certificate	75	97.40
Diploma	2	2.60
Work Experience		
1 year	6	7.79
2 - 3 years	17	22.08
4 - 5 years	25	32.47
>5 years	29	37.66
In-Charge Status		
In-Charged	14	18.18
Not in-charged	63	81.82
Type of Facility		
CHPS	39	50.65
Clinic	7	9.09
Hospital	6	7.79
Health Center	19	24.68
Polyclinic	6	7.79
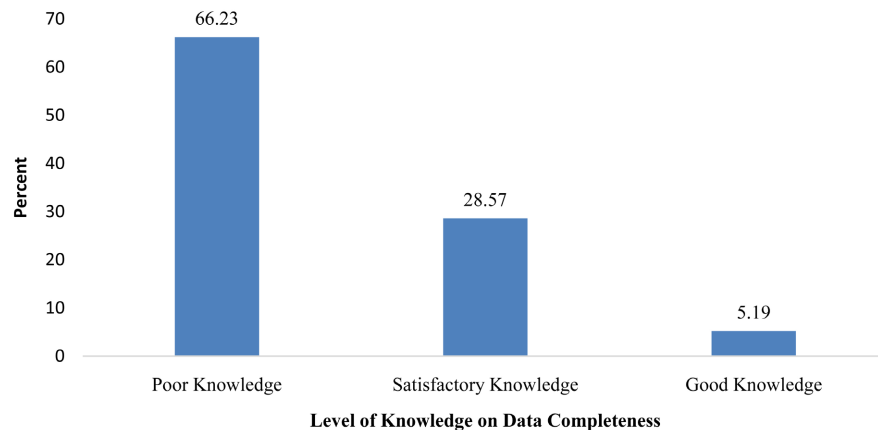
Figure 2. Distribution of level of knowledge of respondents on data completeness.

3.4. Level of Knowledge of Community Health Nurses on Data Timeliness

As displayed in Figure 3, most 64 (83.12%) of the Community Health Nurses had poor knowledge on data timeliness. Also, 8 (10.39%) and 5 (6.49%) have satisfactory and good knowledge regarding data timeliness respectively.

As displayed in Table 2, the majority 27 (61.36%) of the respondents of the 44 who had satisfactory knowledge on data quality were between the ages of 26 to 30 years. All respondents (100%) who had good knowledge on data quality usually took part in report compilation. Most 40 (90.91%) of the respondents who had satisfactory knowledge on data quality also part-took in report compilation, and out of the 72 respondents who part-took in reports compilation, a greater but equal proportion 15 (37.50%) and 15 (37.50%) of those who had satisfactory knowledge on data quality had been compiling reports since 1 to 3 years and 4 to 6 years respectively. There were no statistically significant relationships between age-group/part-take in report compilation and scores in the level of knowledge on data quality (poor, satisfactory and good) of the respondents (χ^2 = 4.4080/1.1729, P = 0.819/0.556, CL = 95%) respectively.

Furthermore, most 42 (95.45%) of the respondents who had satisfactory knowledge on data quality, were community health nurses with certificates. Also, 17 (38.64%) of the 44 respondents with satisfactory knowledge were community health nurses who had working experience of 3 - 4 years. To add, 37 (84.09%) out of the 44 respondents with satisfactory knowledge on data quality were not in-charges. Variations in the knowledge scores between the type of certification/work experience and level of knowledge on data quality (poor, satisfactory and good) are not statistically significant (χ^2 = 1.5400/5.1143, P = 0.463/0.529, CL = 95%) respectively.

Similarly, out of the 44 respondents that had satisfactory knowledge on data quality, the majority 30 (68.18%) of them were taught in school on data quality. Meanwhile, a handful 14 (31.82%) of the respondents who had satisfactory knowledge on data quality were been taught on data quality in school. Also, almost half 21 (47.73%) of the 44 respondents who had satisfactory knowledge on

Table 2. Bivariate analysis of general level of knowledge of community health nurses on data quality with some demographic characteristics.

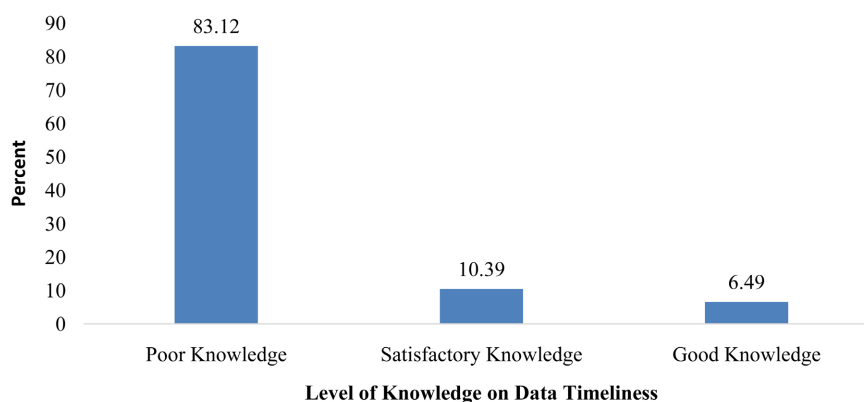| Variable	Level of Knowledge on Data quality			Total	Pearson Chi-Sq.
	Poor	Satisfactory	Good		
	n = 31 (%)	n = 44 (%)	n = 2 (%)	n = 77 (%)	test (χ^2)/P-value (P)
Age-group					
<26 years	1 (3.23)	3 (6.82)	0 (0.00)	4 (5.19)	
26 - 30 years	18 (58.06)	27 (61.36)	2 (100)	47 (61.04)	
31 - 35 years	10 (32.26)	11 (25)	0 (0.00)	21 (27.27)	4.4080 (0.819)
36 - 40 years	0 (0.00)	2 (4.55)	0 (0.00)	2 (2.60)	
>40 years	2 (6.45)	1 (2.27)	0 (0.00)	3 (3.90)	
Part-take in report compilation					
Yes	30 (96.77)	40 (90.91)	2 (100)	72 (93.51)	
No	1 (3.23)	4 (9.09)	0 (0.00)	5 (6.49)	1.1729 (0.556)
How long if part-take in report compilation = yes (n = 72)					
Less than 1 year	6 (20.00)	3 (7.50)	0 (0.00)	9 (12.50)	
1 - 3 years	8 (26.67)	15 (37.50)	2 (100)	25 (34.72)	
4 - 6 years	10 (33.33)	15 (37.50)	0 (0.00)	25 (34.72)	6.7348 (0.346)
Above 6 years	6 (20.00)	7 (17.50)	0 (0.00)	13 (18 (.06)	
Type of Certification					
Certificate	31 (100)	42 (95.45)	2 (100)	75 (97.40)	
Diploma	0 (0.00)	2 (4.55)	0 (0.00)	2 (2.60)	1.5400 (0.463)
Work Experience					
1 year	4 (12.90)	2 (4.55)	0 (0.00)	6 (7.79)	
2 - 3 years	7 (22.58)	9 (20.45)	1 (50.00)	17 (22.08)	
4 - 5 years	7 (22.58)	17 (38.64)	2 (50.00)	25 (32.47)	5.1143 (0.529)
>5 years	13 (41.94)	16 (36.36)	0 (0.00)	29 (37.66)	
In-Charge Status					
In-Charged	6 (19.35)	7 (15.91)	1 (50.00)	14 (18.18)	
Not in-charged	25 (80.65)	37 (84.09)	1 (50.00)	63 (81.82)	1.5426 (0.462)
Taught in School about Data quality					
Yes	28 (90.32)	30 (68.18)	1 (50.00)	59 (76.62)	
No	3 (9.68)	14 (31.82)	1 (50.00)	18 (23.38)	5.7899 (0.055)
Ever been Trained on Data Quality					
Yes	15 (48.39)	23 (52.27)	0 (0.00)	38 (49.35)	
No	16 (51.61)	21 (47.73)	2 (100)	39 (50.65)	2.1105 (0.348)

Figure 3. Distribution of level of knowledge of respondents on data timeliness.

data quality had never received any training on data quality. A greater proportion 16 (51.61%) of the respondents who had poor knowledge on data quality had never been trained on data quality. Differences in the knowledge scores between taught in school/ever been trained on data quality and the level of level knowledge on data quality (poor, satisfactory and good) are not statistically significant (χ^2 = 5.7899/2.1105, P = 0.055/0.348, CL = 95%) respectively.

From Table 3, as the age of the respondent increases, the level of knowledge on data completeness also increases by the odds of 1.22. Also, as the respondent's work experience increases, his/her level of knowledge on data completeness decreases by the odds of 0.79. Similarly, respondents who were taught in school on data quality are more likely to have good knowledge with the odds of 2.96 times compared to those who were not taught in school. Age and work experience were significantly associated with the level of knowledge on data completeness, thus the results were statistically significant (OR = 1.22, OR = 0.79, P > |z| = 0.018, P > |z| = 0.017, N = 77) respectively.

3.5. Data Quality Practices

As shown in Table 4, out the 77 of respondents, 52 (67.53%) responded "Yes" when asked whether they accept errors when dealing with data, and 60 (77.92%) responded no when asked whether they reject errors when dealing with data errors. Nearly half 33 (42.86%) said no when asked whether the DHMT give them feedback on the data they report.

As displayed in Table 5, out of the 16 health facilities, all 16 (100%) of them had copies of their previous monthly reports. However, 14 (87.50%) and 16 (100%) out of the 16 facilities who had copies of reports of their previous forms submitted had no name and signature of the receiving officer respectively. Also, out of the 16 health facilities, 16 (100%) and 14 (87.50%) of their reporting forms had signatures and telephone numbers of reporting officers respectively. Half 8 (50.00%) of the 16 health facilities had missing values on their submitted forms. The majority 10 (62.50%) of the 16 health facilities had no available date of reporting/reminders for report submission, and a greater proportion 13 (81.25%) of the 16 health facilities had no data quality audit team at the facility.

Table 3. Multivariate analysis of some demographic characteristics associated with the level of knowledge on data completeness among community health nurses.

Level of Knowledge on Completeness	Odds Ratio	Std. Err.	Z	P > |z|	[95% Conf. Interval]
Age	1.22	0.10	2.38	0.018	1.04 - 1.45
work Experience	0.79	0.08	−2.38	0.017	0.65 - 0.96
Not taught in school Taught in school	2.96	1.76	1.82	0.069	0.92 - 9.52
_cons	0.00	0.00	−2.78	0.005	0.00 - 0.14

Table 4. The practices of community health nurses in improving data quality.

Variable	Yes N (%)	No N (%)
In dealing with data errors, do you do mostly accept the error?	52 (67.53)	25 (32.47)
In dealing with data errors, do you do mostly correct the error?	71 (92.21)	6 (7.79)
In dealing with data errors, do you do mostly reject the error?	17 (22.08)	60 (77.92)
Are there designated staff(s) responsible for reviewing the quality of data before submission to the next level?	61 (79.22)	16 (20.78)
Are you given feedback on the data you report to the DHMT?	44 (57.14)	33 (42.86)

Table 5. Data quality practices at the facility level.

Variable	Yes N (%)	No N (%)
Availability of copies of monthly reports for the previous months	16 (100)	0 (0.00)
Availability of name of receiving officer on the form	2 (12.50)	14 (87.50)
Availability of signature or endorsement of receiving officer	0 (0.00)	16 (100)
Availability of date receiving officer signed or endorsed the submitted forms	0 (0.00)	16 (100)
Availability of time of receipt to the report being received	0 (0.00)	16 (100)
Availability of name of reporting officer on the form	16 (100)	0 (0.00)
Availability of telephone number of the reporting officer	14 (87.50)	2 (12.50)
Availability of missing values on the forms	8 (50.00)	8 (50.00)
Availability of date of reporting/reminders for report submission at the facility	6 (37.50)	10 (62.50)
Availability of data quality audit team at the facility	3 (18.75)	13 (81.25)
Availability of data validation team report	0 (0.00)	16 (100)

4. Discussion

To attain achievable improvements in the public health sector, good data are core [1]. Therefore, to have accurate, complete and timely data in the healthcare system, healthcare providers who collect and manage the data should have good knowledge on data quality. This study was therefore conducted to assess the level of knowledge and practices of Community Health Nurses on data quality in the Ho Municipality, Ghana.

Out of the 77 Community Health Nurses studied, the majority 49 (63.64%) had good knowledge on data accuracy (Figure 1). This corresponds with results from a similar study conducted in Sierra Leone which revealed improvements in data accuracy [9]. This could be due to regular in-service training for community health nurses on data accuracy on how to obtain accurate data during compilation from the registers by tallying and validation.

Also, the study revealed that; out of the 77 respondents, 51 (66.23%) surprisingly had poor knowledge on data completeness (Figure 2). These results however confirm the assertion by [10] in a study conducted in Ghana on assessment of data quality on the expanded programme on immunization that; 50% of health facilities had incomplete tally books. This may be because of the poor level of knowledge on data completeness as revealed in the study which may translate to poor practices such as incomplete data and hence compromising the quality of the data. This is because a good knowledge of data completeness may yield practical steps in ensuring data and data reports are complete before submission.

There were statistically significant relationships between the age/work experience and the level of knowledge on data completeness (poor, satisfactory and good) (P > |z| = 0.018/ P > |z| = 0.017). This implies as the person grows old, and also gains more working experience, thus working longer in the field, his/her level of knowledge on data completeness increases. However, as the community health nurses (CHN) work experience increase, the CHN no longer pay attention to data quality after some time and they see it as routine and business as usual and responsibility of the junior and inexperience staff. Additionally, the study found that community health nurses who were taught in school on data quality are 3 times more likely to have had good knowledge on data completeness than those who were not taught. This is because they would be knowledgeable in that particular dimension of data quality.

Furthermore, on the level of knowledge on data timeliness, it was found that, a total of 64 (83.12%) out of the 77 respondents had poor level knowledge on data timeliness (Figure 3). This agrees with findings from similar studies conducted in Northern Ghana and Madagascar [11] [12]. The reason for these results might be because, most of the respondents only see it as mandatory to submit report forms at the end of each month but might not have knowledge on issues of data timeliness such as the currency of the data being reported on, report submission at the stipulated time to the health directorate, and availability

of the reports forms at the time they are needed. These could be some of the attributable reasons for the poor level of knowledge on data timeliness by Community Health Nurses.

It is expected that training, work experience as well as type of certification (certificate, diploma) of Community Health Nurses would have a significant association with the level of knowledge on data quality; however, this study revealed no statistically significant relationship with the type of certification and the general level of knowledge on data quality. This could be because Community Health Nurses were only trained on how to record and extract data from the various registers and tally books to write monthly reports rather than training them on the various dimensions of data quality such accuracy, completeness and timeliness.

Importantly also, the study found that 16 (20.78%) of the Community Health Nurses said they did not have a designated staff responsible for reviewing data quality before the report forms are submitted to the next level. This is evidence of the assertion by [13], that, weaker supervisory mechanisms could result in the generation of inaccurate data. Furthermore, the study found that 33 (42.86%) out of the 77 Community Health Nurses studied revealed that, no feedback was given on the data submitted to the health directorate. This finding supports the assertion made by [14] in a study using forty-one low-income countries that one of the shortcomings in most information systems is lack of feedback relative to data recording and reporting performance. For instance, this study demonstrated that half of the copies of previous monthly reports at the 16 health facilities studied had missing values comparable to the finding of a cross-sectional study by [13], in South Africa which recorded 75% of the reports filled by community-based health workers had missing entries. Additionally, the study found that 2 (12.50%) out of the 16 facilities do not have contacts of reporting officers. This finding however contradicts the Ghana Health Service guidelines for ensuring data quality.

Additionally, out of the 16 health facilities studied, most 13 (81.25%) of the 16 facilities had no data quality audit team. This finding could be attributable to reasons why half 8 (50.00%) out of the 16 health facilities studied had missing values on their copies of the previous month's reporting forms submitted. Poor supportive supervision, lack of feedback and poor knowledge on data completeness might be some of the reasons for such practices by the Community Health Nurses at the facility level.

On data quality practice at the facility level, it was commendable that all 16 (100%) of the 16 facilities had copies of reports of the previous month. This finding aligns with [15] who established that all health facilities had copies of monthly data in the clinic after submission. That notwithstanding, all those copies of the previous monthly reports had signatures of the reporting officers. The study also found that 14 (87.50%) of the 16 facilities, had contacts (mobile numbers) of reporting officers on their previous month's reporting forms. This was a laudable practice because it conforms with the Ghana Health Service guidelines

to ensuring data quality at facility levels and also by the Standard Operating Procedure on Health Information of the Ghana Health Services [16].

It was however disappointing to know that, most receiving officers' names and signatures were not on the copies of the previous months' reports. The reason was that officers at the health directorate found it unnecessary since those forms are to be kept at the facility level and hence no need for authentication with their names and signatures. More so, most 10 (62.50%) of the 16 facilities studied had no reminders (monthly data submission itineraries) for report submission. This is against the Ghana Health Service guidelines for data management practices at the facility levels. The reason could be that Community Health Nurses claimed they already knew the time range (before 5th of the preceding month) for monthly data submission in each month and hence there was no need for the itineraries. This could also be contributing factor to the untimely report submitted by some of the facilities at the health directorate.

There should be more investments in pre-service training by the Ghana Health Service and also the development of training curricula on data quality and database management for community health nurses to improve data quality practices at the facility level.

The community health nurses should be trained on data quality and its dimensions, validation, and best practices by the Ghana Health Service/Ministry of Health to help improve the level of knowledge and practices on data quality. Also, data validation teams should be institutionalized and strengthened at the facility level to review the data forms before submitting them. The Ho Municipal Health Directorate should undertake data validation and strict supervision of community health nurses and institutionalize feedback mechanisms to those who generate and report the data. These are crucial in minimizing errors and missing values in reporting forms system and increasing data quality. Further, more studies should be conducted on the accuracy and overall data quality of primary health care data reported by Community Health Nurses.

Limitation of Study

The study targeted 94 community health nurses in the Ho Municipality. However, only 77 were reached out of 94. Because they were on annual leave and maternity leave at the time of the study, thus, could not be reached for the interview.

5. Conclusion

Most Community Health Nurses had a good level of knowledge on data accuracy; nevertheless, they had a significantly poor level of knowledge on both data completeness and timeliness implying that they had inadequate data quality practices. With data quality practices by Community Health Nurses, the issue of missing values, unsigned reporting forms, lack of contacts of reporting officers and non-availability of the itinerary for report submission were due to lack of

supervision and feedback from the municipal health directorate as well as in-adequate incentives to Community Health Nurses. The lack of designated technical staff for data quality review and validation at the facility level is still a major problem that needs serious attention. This requires improvement in the level of knowledge and practices of Community Health Nurses on data quality since they compile, manage and transfer data from the facility level to the district, regional, and national level to be analyzed for decision making.

Conflicts of Interest

The researchers declare no competing conflict of interest.

Funding Information

The researchers were the sole source of funding for the study.

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