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COVID-19 knowledge and perceptions among health information management professionals in Nigeria: implications for health data management

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ABSTRACT

Background/Objective: Coronavirus disease 2019 (COVID-19), a public health emergency of international concern has given rise to the generation of huge health data directly from the source of crisis and it has exposed health care systems to the reality and necessity of digital health. This study attempted to understand the perceptions of health information management (HIM) professionals and the attendant implications for managing health data amid the pandemic. ***Methods/Design****:* A cross-sectional survey using stratified sampling to recruit 123 HIM professionals from three Nigerian public tertiary hospitals, which include Federal Medical Centre, Bida, University College Hospital, Ibadan and Federal Teaching Hospital, Ido Ekiti. The study used a 27-item questionnaire that elicits data on participants' socio-demographic characteristics, knowledge, attitude and perceptions on COVID-19 infection and related healthcare data management. SPSS was used to analyze the data with specifics in descriptive and Chi square test ***Results****:* More than half (66, 57.4%) of participants were between ages 30 and 50 years and 84 (73%) of them were holders of diploma certificates. Social media was the major (43, 37.4%) source of information about COVID-19, 79 (68.7%) participants believed COVID-19 can be contacted through handling of patients' folders and participants' workplace was statistically significant (p-value 0.024) with their opinion. The majority (70, 60.9%) had attended at least a training program on safe use of PPE and would always cover their mouth when coughing or sneezing. More than half (63, 4.8%) were not so confident to attend to patients at the heat of the pandemic and this apprehension was high (66, 57.4%) during patient documentation. Post COVID-19, not many (45, 39.1%) would be able to adjust in their dispositions and an overwhelming majority (90, 78.3%) admitted that the pandemic would affect their HIM practice going forward. ***Conclusion****:* COVID-19 pandemic has necessitated a new order of generating and managing health data and a lot more is required of HIM professionals to really make health data work for care quality improvement in Nigeria.

Keywords: COVID-19; Health data; HIM professionals; Medical confidentiality; Patient documentation

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INTRODUCTION

Coronavirus disease 2019, technically known as SARS-CoV-2 and popularly known as COVID-19, is an infectious disease that has caused an outbreak of respiratory illness[1]. The infection was first identified in December 2019 in Wuhan, the capital of China's Hubei Province[1,2]. Following the severity and spread of the disease, the World Health Organization (WHO), on January 30th, 2020, declared COVID-19 a public

health emergency of international concern and it was declared a pandemic by the same body (WHO) on 11th March, 2020[1]. Ever since the WHO's declaration of this pandemic, there have been thousands of confirmed cases of COVID-19 spread to other parts of the world, including the United States, Europe, Africa and especially, Nigeria in spite of the African mentality of *automatic-heat remedy*[2]. The disease is spreading rapidly with a rising death toll and transmission rates[3]. In Nigeria for instance, the incidence rate at the onset was lower and it graduated to almost a thousand per day. Nevertheless, the rate diminished toward the end of August 2020 and the total figure of confirmed cases by the Nigerian Centre for Disease Control (NCDC) by 30th August 2020 was 53, 865 and total deaths of 1, 013. Mainly, COVID-19 spread during close contact with an infected person, who produces droplets (aerosol) when coughing, sneezing, talking or even breathing[1].

Globally, the pandemic has given rise to the generation of huge health data directly from the source of crisis and it has exposed health care systems both in the developed and developing nations to the reality and necessity of digital health[3,4]. Sources of these statistics include medical diagnosis, hospitalization statistics, infection rate, co-morbidity mapping, drug allergy, incidence rate, fatality rate, and other subtle metadata[4]. The rapidity and fatality of the disease with hike in the demands to generate and manage huge volume of health data brought to light the absence of proper data management and information sharing[3,5]. The prevailing traditional paper-based health records system especially in Nigeria and other developing nations has posed inability to organize a centralized databank. Also, inefficient control system may lead to data distortion during information exchange in an epidemic like that of COVID-19[3,5]. Challenges of health data management during the pandemic include data inconsistency, changing criteria, a large diversity of sources, non-comparable metrics between countries, delays, and so on[1,6]. Timely and accurate information to assess disease burdens, track emerging outbreaks and support disease prevention and control measures is essential in epidemic response[7]. Interestingly, digital technologies are playing a prominent role in the global COVID-19 pandemic response[6,8]. Though patients were concerned about reduced confidentiality with their records held on computer, keeping patients' health records on computers or other technologically-driven media has offered the patients invaluable advantages[9].

Health information management (HIM) is the discipline that has historically focused on the management of medical records[10]. It is the profession dedicated to the effective management of patient health information and healthcare data needed to deliver high- quality treatment and care to the public. Health information management professionals are healthcare providers responsible for improving the quality of healthcare by insuring that the best information is available for making any healthcare decision by managing healthcare data and information resources[11]. They are trained and are experienced in the intersection of clinical and management sciences as well as knowledgeable about data quality, which has equipped them with the capability to maintain the integrity and accessibility of health information[12]. In Nigeria, there is observed sub-optimal adherence to documentation standards, healthcare providers especially HIM professionals lack adequate IT skills though have used the technologies for some years. Generally, a health information system in Nigeria is preponderantly, paper-based[5,13-18]. HIM professionals, like other healthcare providers are confronted with exposure to the pathogen in addition to the observed

stressful working condition and psychological distress[19]. They therefore require adequate moral and psychological support while they too should ensure they self-monitor for signs and symptoms of the infection[20].

Çalışkan *et al* reported that the majority of health workers were concerned about becoming infected with COVID-19[22]. Similarly, da Silva *et al* noted that front-line healthcare professionals who work with symptomatic patients fear for the condition of their health and that of their families[23]. In a study of dentists, most participants considered themselves and their collaborators to be exposed to a high risk due to their jobs and they were afraid of infecting their relatives[14]. This indicates that healthcare providers had the perception of being at higher risk than the general public, due to their close contact with suspected/confirmed COVID-19 cases[21]. In terms of knowledge, studies have shown that Nigerians are highly knowledgeable about COVID-19 and their premier sources of information about the pandemic are the traditional media[24]. A study established that the majority of healthcare workers had good knowledge and positive attitude toward COVID-19[25,] Ekpenyong *et al* equally found that knowledge about COVID-19 preventive guidelines was high among eye care experts[26]. Bhagavathula *et al* reported official government websites as a primary source of information about COVID-19 among healthcare professionals regarded[27]. This indicates that the COVID-19-related updates posted online by official government health authorities had positive implications for improving healthcare providers' knowledge levels[21]. There is dearth of studies in identifying COVID-19 knowledge and attitude among HIM professionals therefore, this current study aims to determine knowledge level and perceptions of Nigerian HIM professionals toward COVID-19 and related healthcare data management.

METHODS

Study setting

This study was carried out in three public tertiary health facilities in Nigeria. These include Federal Medical Centre, Bida, Federal Teaching Hospital, Ido-Ekiti and the premier University College Hospital, Ibadan between 16th September and 7th October, 2020.

Study design

The study design deployed was cross-sectional.

Study population

There are 67, 37 and 75 HIM professionals in the services of Federal Medical Centre, Bida, Federal Teaching Hospital, Ido-Ekiti and the premier University College Hospital, Ibadan, respectively as at the time of this study. This gives a total of 179 HIM professionals as target population for the study.

Sample size

A total sample size of 123 was computed using the online sample size calculator, Raosoft. The formula reads thus:

$$SS = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = z- value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal

(.5 used for sample size needed)

c = confidence interval, expressed as decimal (e.g., 0.04 = +or- 4)

From the computed sample size of 123 and deploying stratified sampling method, there were 46, 25 and 52 samples to Federal Medical Centre,

Bida, Federal Teaching Hospital, Ido-Ekiti and University College Hospital, Ibadan, respectively.

Sampling technique

The study deployed stratified sampling method. Of the 123 sample size computed, Federal Medical Centre, Bida with target population of 67 of 179 has 46 sample; Federal Teaching Hospital, Ido Ekiti with 37 has 25 and University College Hospital, Ibadan with 75 has 52 samples.

Data collection tools

The study used a 27-item questionnaire that elicits data on participants' socio-demographic characteristics, knowledge, attitude and perceptions on COVID-19 infection and related healthcare data management. It was a self-administered structured questionnaire, validated through a pre-test among ten members of a homogenous group.

Data analysis and management

The statistical software SPSS version 16 was used to compute the data. Analysis done include; descriptive and the use of chi square to elicit relationships. Tables and charts were used for illustrations.

Ethics

The ethics approval to conduct this study was obtained from the Health Research Ethics Committee of Federal Medical Centre, Bida. Permission was sought from authorities in other centres based on the initial ethics approval from Bida. Informed consent was obtained from all participants having given vivid explanation in the information sheet.

RESULTS

Of the 123 participants recruited, nearly all (115, 93.5%) returned completed questionnaires. Of the 115 participants, more than half (66, 57.4%) were between the ages of 30 and 50 years, greater portion (75, 65.2%) were females, nearly every three in five (67, 58.3%) were health records officers by cadre and most of them (84, 73%) were holders of diploma certificates (HND, ND & PD). In all, there were 47 (40.0) HIM professionals from FMC, Bida, 46 (40%) from UCH, Ibadan and 22 (19.1%) from FTH, Ido-Ekiti. Social medical was the major (43, 37.4%) source of awareness about COVID-19 among HIM professionals.

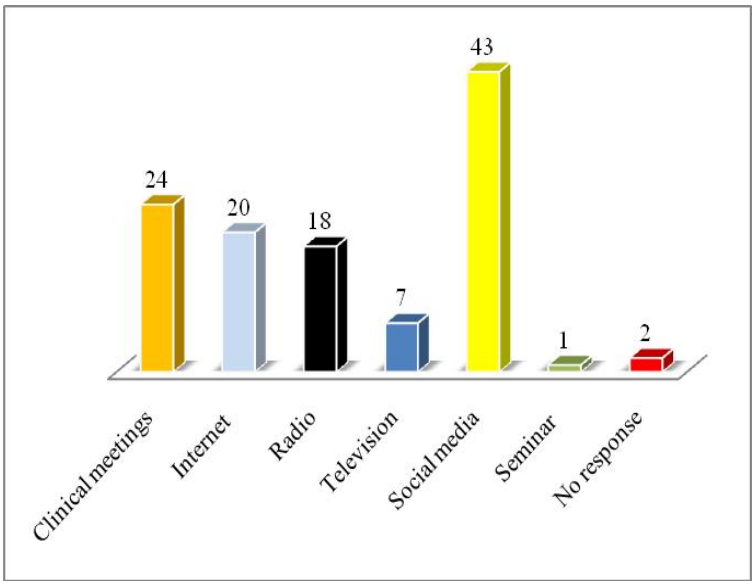

Fig 1: Source of awareness of COVID-19

On basic knowledge of COVID-19, the majority of participants understand that COVID-19 can be transmitted through aerosol (92, 80%) and through objects like patient folder (79, 68.7%). The majority of participants often cover their mouth when coughing or sneezing (101, 87.8%) and wash their hands regularly (99.86.1%). and Most participants (70, 60.9%) had attended training(s) on personal protective equipment for safety during the pandemic. Nearly half of the participants (57, 49.6%) had the confidence to attend to patients at risk of COVID-19 and an overwhelming majority (101, 87.8) confidently opined that COVID-19 would change their practice of health information management.

Table 1: General knowledge and perceptions about COVID-19 among HIM professionals in Nigeria

Item	Positive response N(%)	Negative response N(%)	Indifferent N(%)
Knowledge and attitude			
COVID-19 can be contacted through droplets of aerosol	92(80)	9(7.8)	14(12.2)
COVID-19 can be contacted through contaminated objects such as patient folder	79(68.7)	23(20)	13(11.3)
Attended training on safe PPE amid COVID-19	70(60.9)	41(35.7)	4(3.5)
Regular covering of mouth when coughing or sneezing	101(87.8)	0	14(12.2)
Regularity of hand washing	99(86.1)	19(16.5)	3(2.6)
Perceptions			
Too much unnecessary worry has been made about COVID-19 outbreak	92(80)	12(10.4)	11(9.6)
Did you have confidence attending to patient during the heat of the pandemic?	62(53.9)	50(47.5)	3(2.6)
How confident do you feel attending to a patient or at risk of COVID-19 during patient documentation?	57(49.6)	54(47)	4(3.5)
Post COVID lockdown, how confident would you feel attending to any patient?	86(74.8)	24(20.9)	5(4.3)
How much would COVID-19 change the way you practice HIM?	11(9.6)	101(87.8)	3(2.6)
How satisfied are you with the amount of health information available about COVID-19?	60(52.2)	46(40)	9(7.8)
Do you have confidence in the way NCDC managed health data confidentiality during the pandemic?	50(43.5)	47(40.9	18(15.7)
Are you satisfied with the statistics being released daily by NCDC?	38(33)	63(54.8)	14(12.2)
How do you feel about the public image of HIM professionals as frontline health workers	96(83.5)	13(11.3)	6(5.2)

Not many (50, 43.5%) were confident in the way NCDC handled medical confidentiality during the pandemic and the majority (96, 83.5%) were enthusiastic in the public image of HIM professionals as front-line healthcare providers.

Chi square test reveals that workplace was significantly associated with knowledge about contaminating objects (0,024); source of awareness (0.007); confidence in attending to patient at risk (0.007); changing ways of practice (0.006); public image (0.017) and satisfaction with NCDC statistics. It is noteworthy that attendance at workshops had no significant association with knowledge and perceptions of participants.

DISCUSSION

HIM professionals have their rightful place in the management of health data even in the heat of COVID-19 pandemic in Nigeria. Participants' workplace played a vital role in determining their knowledge and perceptions of COVID-19 and related health data management practices. Whereas, their COVID-19 related training has no impact in their knowledge and perception. A considerable majority of HIM professionals in this study have good knowledge of COVID-19. This is an improvement on a study, where healthcare providers are said to have poor knowledge of the disease[27]. Social medial was the main source of awareness of COVID-19 among participants. This is in congruent with a study by Bhagavathula *et al* where most participants used social media as the major source of COVID-19 information[27]. This calls for a concern as health authorities and scientists have warned against accessing COVID-19 information from social media as such information are unverified and malicious and could be detrimental to medical confidentiality and effective health care service delivery[31,32].

Not many of the participants were comfortable in the way NCDC manage confidentiality of COVID-19 data. This may not be unconnected with the fact that knowledge and attitude of Nigerian healthcare providers about medical confidentiality has been inadequate as they are not conversant with their respective responsibilities toward confidentiality[28,29]. Related to this, when health data management is handled by other workers other than HIM professionals, medical confidentiality is subjected to some level of breach and threats[30]. Their concerns may equally be linked to the high demand for data in the wake of COVID-19, which might be a threat to medical confidentiality[4]. Although many HIM professionals in the study area would do better post COVID-19, many of them find it difficult to document patients at the risk of the infection for the fear of being infected. This finding is in agreement with a study of Portuguese healthcare professionals who were afraid they could be infected while providing health care services to patients at risk of the infection[21]. Most participants in this study were not comfortable with the volume of health statistics turnout by the NCDC. Their perception on large volume of data is unfounded as studies have shown that the pandemic has given rise to the generation of huge health data directly from the source of crisis[3,4]. Given the role HIM professionals play in the health care system as front-line data managers, their rightful engagement in the management of COVID-19 will be resourceful[11].

Study limitations

First, the study was limited to HIM professionals in only three out of the 54 existing public health hospitals owned by the Federal Government of Nigeria, leaving the barrage of other tertiary health facilities by state governments, private organizations and other facilities at the secondary and primary level. For this reason, generalization may be an issue.

CONCLUSION

COVID-19 pandemic has necessitated the generation of large volume of data and a new order of generating and managing health data, however, HIM professionals in Nigeria have been left to only data generation with much left to be done about dissemination and meaningful use. As front-line health data managers therefore, a lot more is required of HIM professionals to really make health data work for care quality improvement in Nigeria.

Recommendation

i. HIM professionals should be proactive and alive to their responsibilities;
ii. They should ensure high quality data collection and timely dissemination of data for informed public health decision making;
iii. There is a need for Government intervention for more employment opportunities for HIM professionals;
iv. Adequate funding for health information systems;
v. Policy formulation on health information management;
vi. Engagement of HIM professionals in health information systems policy framework such as deployment to NCDC;
vii. Provisions for continuing capacity building for HIM professionals in Nigeria.

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Authors Contribution:

OBM conceived of the study, participated in literature search, data abstraction and collection, analysis and coordination. AIT initiated its design, participated in literature search, data abstraction and collection, analysis and coordination and drafted the manuscript. SQB, OTE, AAE, and OAO participated in the design, literature search, technical process, data analysis and coordination and reviewed the final manuscript.