

# Knowledge, Attitude, and Practices of Healthcare Workers towards COVID-19: A Cross-Sectional Study in the Ashanti Region, Ghana

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## ABSTRACT

**Objective:** COVID-19 is such a rapidly expanding pandemic caused by a highly infectious human coronavirus. Healthcare workers are at the forefront of fighting the disease and it is their responsibility to protect themselves and their patients from a healthcare-associated spread of the virus. The study sought to investigate the knowledge, attitudes, and practices of healthcare workers in the Ashanti region of Ghana towards COVID-19.

**Materials and Methods:** The study involved a quantitative cross-sectional interview. A structured questionnaire with Cronbach's Alpha value of 0.71 was used to collect data from 373 healthcare workers, sampled through a multistage random technique.

**Results:** The study established that 85.8% of the healthcare workers embraced good knowledge of COVID-19. 56.6% of the respondents had a good attitude towards COVID-19. Less than 50% of the respondents had excellent preventive practices for COVID-19.

**Conclusion:** The Healthcare workers in the Ashanti region demonstrated good knowledge and positive attitude however a divergence remains in their preventative practices toward COVID-19.

**Keywords:** COVID-19; Ghanaian Healthcare Workers; Knowledge; Attitude; Practice

**Abbreviations:** SARS-CoV: Severe Acute Respiratory Syndrome Virus; MERS-CoV: Middle East Respiratory Syndrome Virus; HCWs: Healthcare Workers; WHO: World Health Organization; CI: Confidence Interval

## Introduction

The Coronavirus disease-19 (COVID-19) is not the first and will most probably not be the last respiratory pandemic that the world experiences. Influenza and coronaviruses have historically infected people with pandemic potential. Three deadly coronaviruses lead to the loss of several lives since the discovery of the Severe Acute Respiratory Syndrome Virus (SARS-CoV) in 2003 in the Guangdong province of China, the Middle East Respiratory Syndrome Virus (MERS-CoV) in 2013 in Jeddah, Saudi Arabia, and the Severe Acute Respiratory Syndrome Virus-2 (SARS-CoV-2) in 2019 in Wuhan, China [1]. There

have been other instances of novel human coronavirus (HCoV) emergence causing pandemics, although the COVID-19 pandemic is the first known caused by Human coronavirus. There has been multiple healthcare-associated spread of MERS; 13% to 70% were among healthcare workers (HCWs). The influenza A (H1N1) pandemic in 2009, the emergence of the influenza A (H5N1), SARS-CoV, and the SARS-CoV-2 pandemic prompted a rise in patient screening for respiratory infections. Preventive measures for COVID-19 have increased the importance of infection prevention and control measures to prevent intra-hospital spread of respiratory illnesses, providing an opportunity to change practice for other respiratory infections [2].

COVID-19 spreads from person to person through the inhalation of aerosols from infected Individuals. COVID-19 is highly infectious, and its primary clinical symptoms include fever, dry cough, fatigue, headache, and dyspnoea. The World Health Organisation (WHO) declared COVID-19 as a public health emergency of global concern [3]. The SARS-CoV-2 caused a global pandemic. Among the critical matters are healthcare workers' infection and healthcare-associated spread of the disease. The WHO issued interim infection prevention and control guidelines, such as social distancing, hand washing, testing, and tracing, affecting community members to limit healthcare workers' exposure to SARS-CoV-2 viruses during patient care [4]. These workers are at the frontline of the COVID-19 response, and daily exposed to the pathogen. Unfortunately, healthcare workers experience significant challenges in adhering to the guidelines. One such reason is limited knowledge of the disease. As in the rest of the world, the SARS-CoV-2 infected healthcare workers in Ghana. The healthcare workers in Ghana followed the WHO interim guidelines for preventing and controlling COVID-19. The Ministry of Health (MOH) also published provisional standard treatment guidelines for COVID-19 and encouraged the training of all healthcare workers to protect themselves from the virus and to prevent its spread. Usually, in institutions in Ghana, healthcare workers do not observe the protocols. Not all the healthcare facilities in Ashanti had sufficient resources, such as PPE and isolation facilities for suspected COVID-19 cases [5].

In the northern region of Ghana, the Savelugu Hospital closed for two weeks following an outbreak of COVID-19 among hospital staff and patients. A lack of knowledge of healthcare workers resulted in delayed identification and treatment of COVID-19 patients and a rapid spread of SARS-CoV-2 infections. Negative attitudes regarding their responsibilities toward preventing the spread of COVID-19 and poor practices of preventive protocols in managing COVID-19 patients put themselves, their patients, and the community at risk. The healthcare workers who contracted COVID-19 transmitted the infection to their colleagues, families, relatives, and friends. To guarantee the control of respiratory infections, such as the COVID-19 infection, healthcare workers' knowledge of prevention and control measures is essential. It is also important to determine the factors affecting their attitude to have adequate practices to early diagnose and treat patients and prevent the spread of infections. This study, therefore, sought to investigate the KAP of healthcare workers in the Ashanti region of Ghana towards COVID-19.

## Methods

We adopted a cross-sectional study design to determine healthcare workers' knowledge, attitudes, and practices (KAP) during the COVID-19 pandemic. The study was conducted via a self-administered questionnaire to 373 healthcare workers in five selected healthcare facilities in the Ashanti region sampled through the multistage random technique. There is no standardised and validated device

for assessing KAPs on COVID-19. The questionnaire was constructed from two questionnaires that were previously used to determine healthcare workers' KAP towards COVID-19. Sections of the instruments of Limbu et al. and Kamali et al. were used [6,7].

## Measurement

Knowledge and attitude were assessed using a five-point Likert scale, and scoring was conducted by assigning numbers 1-5 to the scale: strongly agree - 5; agree - 4; neutral - 3; disagree - 2; strongly disagree -1. The more frequent answers of 4 and 5 revealed adequate knowledge and a positive attitude, whereas limited knowledge and negative attitude were indicated by more frequent scores of 3 and below. The scoring of the practices of the healthcare workers towards COVID-19 prevention was conducted by assigning 0 to an incorrect answer and 1 to a correct answer. The practice questions were 17 with three options (Yes, NO, and lack of facility/inadequate equipment). The total score was calculated and divided by the number of questions and later multiplied by 100 to obtain the cumulative percentage. The respondents who scored 80%-100% on the knowledge, attitude, and practice questions were considered to have very good knowledge, excellent attitude, and practices 60%-79% had good knowledge, attitude, and practices, and a score less than 60% was considered limited knowledge, poor attitude, and poor practices. The questionnaire comprised 60 items, of which almost all were close-ended questions.

- Part 1:** Comprises the demographic information and source of information on COVID-19.
- Part 2:** Focused on questions about the respondents' knowledge of COVID-19,
- Part 3:** Included questions on the respondents' attitude towards COVID-19,
- Part 4:** The respondents answered questions about COVID-19 prevention.

## Statistical Analysis

The demographic characteristics are compared with the level of KAP scores using the Chi-square test. A 95% confidence interval (CI) was used to quantify the strength of the association between sociodemographic characteristics and KAP scores of healthcare workers. The level of significance was set at  $P < 0.05$  (two-sided).

## Results

### Demographic Characteristics of Respondents

In our study, 373 healthcare workers filled out questionnaires received from all the facilities. The mean age was 30.96 years (SD=6.25; ranged, 20-39) Table 1. shows the demographic characteristics of the participants.

**Table 1:** Demographic characteristics of 373 healthcare workers in the study.

Characteristics	No. of respondents	Percentage (%)
Age		Mean:30.96, SD:6.25
20-39	327	87.7
40-49	43	11.5
≥50	3	0.80
Gender		
Male	102	27.34
Female	271	72.66
Marital Status		
Married	162	43.43
Single	205	54.96
Separated	6	1.61
Place of work		
Hospital A	75	20.11
Hospital B	73	19.57
Hospital C	75	20.11
Hospital D	76	20.37
Hospital E	74	19.84
Duration of experience		
Less than two years	127	34.05
2-5 years	143	38.3
Greater than 5 years	103	27.6
Religion		
Christianity	334	89.54
Islam	38	10.19
Traditional	1	0.27
Highest level of education		
Master's degree	14	3.75
Bachelor degree	126	33.78
Diploma	191	51.21
Certificate	42	11.26

### Source of Information Regarding COVID-19

Healthcare workers' sources of information regarding COVID-19 are represented in Figure 1. Most healthcare workers received information regarding COVID-19 from the news media (32.7%, n=122),

and 21.7% reported they obtained their information from the website of their hospital. Others remarked on social media (20.9%, n=78) and international organisations, such as the WHO (20.9%, n=78). Few reported receiving information from friends and relatives (3.8%, n=14).

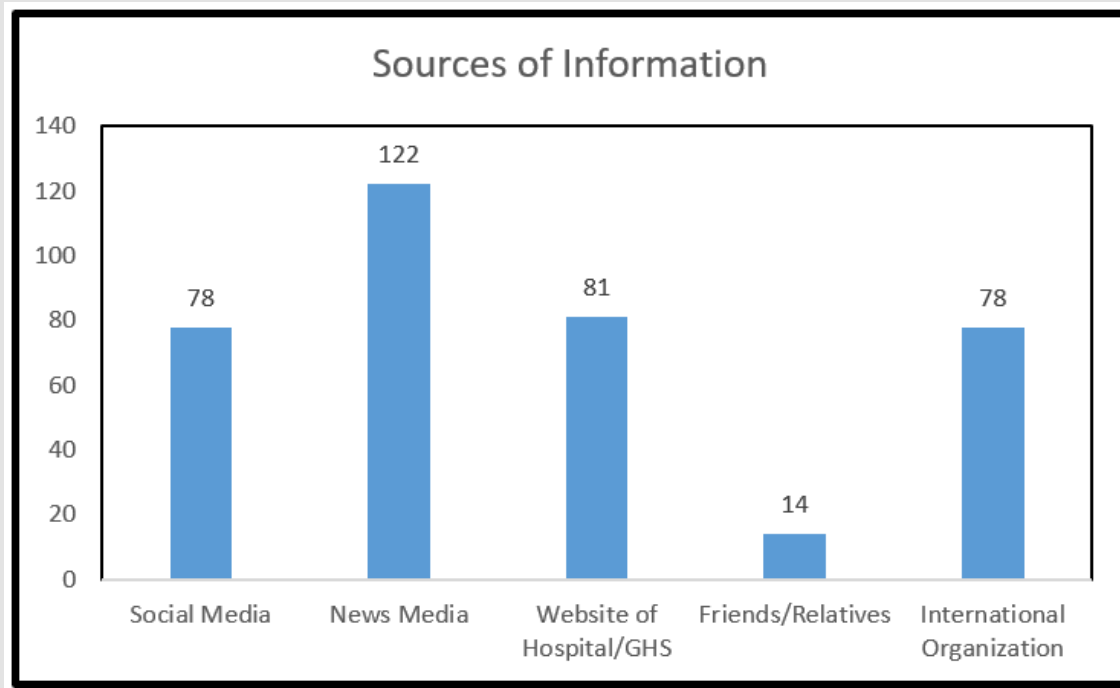


Figure 1: Healthcare workers' source of information on COVID-19.

### Healthcare Worker's Knowledge, Attitude, and Practice Score on COVID-19

Findings from the study revealed that 11% had exceptional knowledge, and a few (3.2%) had limited knowledge of COVID-19. They obtained less than 60% on the knowledge questions. Most respondents, indicating 85.8%, had good knowledge of COVID-19 (Table 2). The study revealed that 56.6% of the healthcare worker respondents had good attitudes towards COVID-19 whereas 22.3% had poor attitudes. (Table 3). Less than 50% of the healthcare worker respondents had excellent practices towards COVID-19 prevention in the Ashanti Region (Table 4). The KAP scores are also presented in Figure 2. The results from the bivariate analysis revealed there was a significant positive association between the healthcare worker respondents' attitudes and practices towards COVID-19 (p=0.022). The respondents' good attitude related positively to their knowledge of COVID-19 (p=0.048) (Table 5).

Table 2: Knowledge category.

	Frequency	Percentage	Cumulative percentage
Limited knowledge	12	3.2	3.2
Good knowledge	320	85.8	89.0
Excellent knowledge	41	11.0	100.0
Total	373	100.0	

Table 3: Attitude category.

	Frequency	Percentage	Cumulative percentage
Poor attitude	83	22.3	22.3
Good attitude	211	56.6	78.9
Excellent attitude	79	21.1	100.0
Total	373	100.0	

**Table 4:** Practice categories.

	Frequency	Percentage	Cumulative percentage
Poor practices	92	24.7	24.7
Acceptable practices	98	26.3	51.0
Excellent practices	183	49.0	100.0
Total	373	100.0	

**Table 5:** Bivariate analysis of healthcare workers' knowledge, attitudes, and practices towards COVID-19 by using the Chi-Square.

Variable	N	Df	P-value (2 sided)
Attitude vs. practice	373	1	0.022
Attitude vs. knowledge	373	1	0.048
Practice vs. knowledge	373	1	0.091



**Figure 2:** The KAP Score of COVID-19 among healthcare worker respondents in the Ashanti Region.

## Discussion

Findings from the study revealed that most respondents, indicating 85.8%, had good knowledge of COVID-19. The result is comparable with two studies conducted in Nigeria, where the healthcare worker respondents' knowledge of COVID-19 was 88.75%, and 82.4% respectively [8,9]. The findings of the present study about good knowledge of COVID-19 were low compared to two studies conducted in Pakistan [10,11]. Conversely, the percentage of healthcare worker respondents of this study who obtained good marks for their understanding of COVID-19 is much higher than that of studies conducted in Thailand and Nepal [12,13]. The differences in the knowledge level of the respondents in the mentioned studies may relate to most healthcare workers having had relevant training on COVID-19, whereas others received no training before the studies were conducted. Secondly, the study revealed that 56.6% of the healthcare worker respondents had good attitudes towards COVID-19. This finding compares well with

that of two studies conducted in Nepal, where 53% and 54% of good attitudes were recorded [6,14].

The finding of the present study is also low compared to a study conducted in Ethiopia [15]. The difference in the healthcare worker respondents' attitudes could be owing to variances in the study setting, the timeframe of the study, and the cut-off points for the attitude scores. Less than 50% of the healthcare worker respondents had excellent practices towards COVID-19 prevention in the Ashanti Region. In a similar study in Uganda, only 37% of the healthcare worker respondents had good practices towards preventing the spread of the coronavirus disease [16]. Much higher scores were identified in studies in China, and Yemen, where 89.7% and 87.7% of the healthcare worker respondents had good practices towards COVID-19 prevention [17,18]. In the current study, most of the healthcare worker respondents who exhibited poor preventive practices indicated that a lack of personal protective equipment and few isolation facilities in

the Ashanti region were to be blamed. There was a significant positive association between the healthcare worker respondents' positive attitudes and practices towards COVID-19. The respondents' attitudes related positively to their knowledge of COVID-19. The Health Belief Model and the KAP theory explain this. "Knowledge is the foundation of behaviour (practice), and attitudes are the driving force of behaviour change" [19].

"A person's intention of a specific behaviour is alienated from his/her attitude towards that particular behaviour".<sup>19</sup> The study established a high knowledge level among the healthcare worker respondents regarding COVID-19. An increase in knowledge level helps to reduce misinformation, eventually leading to a good attitude. Acquisition of knowledge by the respondents enabled them to know their susceptibility to COVID-19 infection, the severity of the disease, the benefits of preventive actions, and their ability to initiate new preventive behaviours. In addition, our study results revealed that COVID-19 KAP differs by sociodemographic factors. According to the Health Belief Model, the modifying factors refer to factors influencing behaviour change. It includes the person's age, gender, ethnicity, personality, knowledge, and socioeconomic status [20]. The healthcare worker respondents with a higher level of education had excellent practices to prevent the spread of the infection. The finding follows studies conducted in China and Ethiopia [21,22]. The variations may be related to higher education programmes preparing graduates to develop the habit of doing research, and this helped them to search for relevant information regarding COVID-19 and the prevention of the spread of the infection. Pertinent information acquisition leads to behaviour change and, therefore, good preventive practices. Another reason might be that those with a higher level of education may have a better understanding of the spread, effect, prevention, and control of infections.

## Conclusion

In conclusion, our findings suggest that Healthcare workers in the Ashanti region demonstrated good knowledge and positive attitude however, a divergence remains in their preventive practices towards COVID-19, suggesting that interventions should go far beyond just knowledge and attitude; however, strategies should be developed to prevent the healthcare-associated spread of COVID-19 and other respiratory infections in all health facilities across the globe.

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## Ethical Consideration

Written permission to conduct the research was obtained from the Faculty of Health Sciences Research Ethics Committee of the University of Pretoria (reference no. 357/2022) before data collection.

Permission to conduct the study in the selected healthcare facilities was obtained from the Regional Director of Health, Ghana Health Service, Ashanti Region.

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