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A SURVEY TO ASSESS KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS COVID-19 AMONGST NHS HEALTHCARE WORKERS AT A TERTIARY HEALTH BOARD IN THE UNITED KINGDOM

Epidemiology

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ABSTRACT

Background and aim: The world is currently facing a public health emergency in the form of COVID-19 pandemic. United Kingdom confirmed it's initial cases in February 2020 and since then the NHS (National Health Services) and its healthcare workers have been working diligently to fight this pandemic facing unprecedented challenges.

Materials and methods: A cross-sectional knowledge, attitude and practices (KAP) survey was conducted using a questionnaire among healthcare professionals belonging to an NHS University Health Board in Wales, UK. The responses were assessed and relevant statistical analyses were performed using SPSS software.

Results: A total of 208 frontline NHS Workers participated in the study. Mean knowledge score in the study was 87.83%. Majority (67.79%) of the participants had a high knowledge score. Knowledge scores were found to have a positive association with age. The general attitude among the participants was found to be optimistic with a mean attitude score of 69.87%. Practices varied amongst the participants with 77.5% reporting regular use of the mask at work.

Conclusion: This study reflects that majority of healthcare professionals had a sound knowledge and understanding about the pandemic with an optimistic attitude towards its control. Majority of them have been implementing safe practices at workplace.

KEYWORDS

COVID-19, NHS, UK, Health-workers, KAP, Knowledge, optimistic, Attitude, Practices, survey,

1. INTRODUCTION

The world is currently in the grip of a pandemic - Coronavirus Disease 19 (COVID-19); caused by a novel strain of coronavirus previously not identified in humans. The initial outbreak of this disease emerged in Wuhan, China and spread rapidly affecting other parts of China and eventually the world. As of today, outbreaks and clusters of the disease have been observed in most parts of the world especially Europe, America and Asia, as well as other continents like Africa and Australia [1].

Majority of the people infected with the COVID-19 virus (SARS-CoV-2) experience mild to moderate respiratory illness. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness [2]. The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Reverse transcriptase polymerase chain reaction (RT-PCR) is the commonest test used for detection of this disease and is deemed as the gold standard. Antibody testing has also been initiated in many countries including the UK. Mildly infected and asymptomatic population is being targeted to understand the epidemiology of this disease [3]. At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments [4,5].

Not only has the pandemic affected the health of millions of people worldwide, but has also staggered economies and changed the way of living as we knew it. Lockdowns, social distancing and travel restrictions have been imposed in most of the affected countries to curb the spread of this virus. Strict compliance to these measures and utmost cooperation amongst people is the only way to combat the spread of this deadly disease until a specific cure or vaccine is developed.

In the United Kingdom the first transmission of COVID-19 was confirmed in Feb 2020. After initial few weeks of voluntary restrictions including social distancing, an official nationwide lockdown was announced on the 23rd of March 2020. This period saw the National Health Service (NHS) - the public health care system in the UK - frantically working to get ready to combat what became to be known as 'The Virus'. Healthcare workers were re-deployed and their working hours were increased in face of an extraordinary national health situation. The use of Personal Protective Equipment (PPE) became a must for healthcare workers at the frontline of the pandemic.

As more and more research goes into this pandemic, new information on the disease and virus is emerging by the day. However, data on this disease, especially on people's understanding and practices, is still limited. Healthcare workers are facing unprecedented challenges in this pandemic; with heightened risk of infection to themselves and their families, longer working hours and psychological stress to name a few. We therefore conducted a KAP (Knowledge, Attitude and Practices) survey to identify knowledge gaps, beliefs, and behavioural patterns regarding COVID-19 in a subset of this population.

2. AIM

To assess knowledge, attitude and practices towards the COVID-19 outbreak among healthcare professionals at a tertiary care teaching University Health Board in the United Kingdom.

3. METHODOLOGY

This cross-sectional survey was conducted via Google forms, starting five days after the lockdown was implemented in the UK. Invitation to participate was disseminated via Watsapp messenger and email. Survey responses were collected over a duration of 5 weeks. Healthcare professionals working across 4 sites belonging to a large NHS University Health Board in Wales, United Kingdom were invited to participate in the survey and an informed consent was obtained before they attempted the survey. All collected data was treated as confidential and no personal identifiers were collected.

The survey consisted of a questionnaire developed by the authors; it had a set of 20 questions based on the knowledge, perception and practices towards COVID 19. For the purpose of analysis, an arbitrary scoring system was used to assess the knowledge whereby each correct answer weighed 1 point. The first three questions from the section of attitude were also scored similarly. This set of questions reflected the general perception and confidence among healthcare professionals with respect to the way the pandemic was being dealt with as well as control of the same in time to come. Descriptive statistics were used to summarize the results. Chi square test and correlation coefficients were used in order to assess the association and correlation between the responses and the variables.

4. RESULTS

A total of 208 Health Care Workers (HCWs) participated in this survey. Of the participants who undertook the survey, about 17.8% were Consultants and 34.1% were Junior Doctors or Registrars. Over 35%

were nursing or theatre personnel and another 12% belonged to other healthcare professions like radiographers and operating department practitioners (Figure 1).

The age distribution of the participating population is depicted in Figure 2 and the survey questions and responses received are tabulated in Tables 1, 2 and 3.

Table 1: Knowledge Questions And Responses

Knowledge Question	Percentage of respondents answering		
	Yes	No	Not Sure
K1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia	**93.3**	**2.4**	**4.3**
K2. The incubation period of COVID-19 has been estimated to be between 1-14 days	**95.2**	**1.4**	**3.4**
K3. Not all persons with COVID-19 will develop to severe cases. Those who are elderly or have chronic illnesses are more likely to be severe cases	**92.3**	**4.8**	**2.9**
K4. Young persons with no chronic diseases are safe from severe outcome with COVID-19	**6.3**	**84.6**	**9.1**
K5. Persons with COVID-2019 can transmit the virus to others when symptoms are not present	**92.8**	**0.00**	**7.2**
K6. To prevent the infection by COVID-19, individuals should avoid going to crowded places and avoid taking public transportations	**97.1**	**1.4**	**1.4**
K7. At this point of time, there are no approved vaccines for COVID-19	**98.1**	**0.00**	**1.9**
K8. Antibiotics have proven to be effective in prevention or treatment of COVID-19 infection	**3.4**	**83.2**	**13.5**
K9. To date, there is no evidence that a dog, cat or any pet can transmit COVID-19	**68.3**	**13.9**	**17.8**
K10. Are you aware of the levels of PPE, and which to use when	**73.6**	**3.4**	**23.1** (Partially aware)

Table 2: Attitude Questions And Responses

Attitude Question	Percentage of respondentsanswering	
	Yes	No
A1. Do you agree that COVID-19 will eventually be successfully controlled?	**87.0**	**13.0**
A2. Do you think our government is doing enough to control the COVID-19 outbreak?	**38.0**	**62.0**
A3. Do you have confidence that NHS can win the battle against the COVID-19 virus?	**84.6**	**15.4**
A4. Which of the following in your opinion will be most helpful in succeeding against COVID-19?	1. Lockdown and social isolation measures - **62.0** 2. Readily available testing for NHS workforce - **10.6** 3. Contact tracing and testing for public -**27.4** *Represented in Figure 3	
A5. Do you feel at risk of being infected while at work due to lack of protective gear/equipment?	Yes - **39.9** No - **20.7** Sometimes - **39.4**	

Table 3: Practice Questions And Responses

Practice Questions	Percentage of respondents answering	
	Yes	No
P1. In recent days, have you visited any family or friends in the vulnerable or high risk group?	**7.7**	**92.3**
P2. How often do you wear a mask/gloves while at work since the outbreak?	• All the time - **31.3** • Often - **46.2** • Occasionally - **14.4** • Never - **8.2** *Represented in Figure 4	
P3. Do you wear a mask when leaving home for non-work related jobs?	**5.8**	**94.2**
P4. Do you stand at least 2 m apart from patients or colleagues when at the hospital?	**42.8**	**57.2**
P5. Do you feel the need to or have you stocked up essential items such as groceries?	**42.3**	**57.7**

It was found that the mean knowledge score among the study participants was 87.83%. Majority of the participants (67.79%) were considered to have a high knowledge with a score of 90% or more. Only 8 (3.85%) participants scored 60% or less in the study. It was also found that age was significantly associated with better knowledge i.e. healthcare professionals aged 40 and above (76.47%; n=119) had significantly higher knowledge score (score ≥ 90%) than their younger counterparts (p=0.002; Chi-Square=9.6). There was no significant difference in the knowledge scores among physicians, nurses, technicians and other professionals (p=0.15; Chi-Square=2.02).

The general attitude of the professionals participating in the survey was positive and they were optimistic about the outcome of the pandemic with a mean attitude score of 69.87% (this included the first 3 attitude questions). Almost 62% believed that lockdown and social isolation would go a long way in curbing the spread, as compared to contact tracing and testing (27.4%); and readily available testing for NHS taskforce (10.6%).

A majority of participants (92.3%) reported that they had not been visiting friends or relatives in recent days. Almost 31.3% participants reported constant usage of mask at work while 46.2 reported regular use, if not continuous. Over half of the participants (57.2%) did not strictly practice social distancing when at work, which may be in part due to the nature of the profession which necessitates proximity with patients.

5. DISCUSSION

In our study, majority of the participants were found to have a good knowledge score regarding COVID-19, which had a significant association with increasing age of the participants. These findings were similar to some other studies conducted across different parts of the world. In a survey amongst health professionals in Greece, Papagiannis and colleagues found that a majority of subjects (88.28%) had a good level of knowledge, and they felt this contributed to the successful management of the pandemic in Greece [6]. A KAP study in Uganda by Olum R et.al also reported a high mean knowledge score of 82.4% with 69% of the study participants having sufficient knowledge, along with a positive association with age of the participants [7]. However, there have been some studies, like a KAP survey conducted by Saqlain M in Pakistan, where age has been inversely associated with knowledge [8]. A survey conducted by Mehrotra and colleagues depicted a moderate level of knowledge amongst health care professionals in India regarding the evolving coronavirus pandemic. Interestingly the knowledge gap in these participants was regarding management protocols and biomedical waste management [9]. Measures like tailored educational campaigns, information sharing through webinars and newsletters, and regular updates from healthcare authorities on the emerging situations in respective regions, would further improve knowledge amongst frontline workers and public as well. In the modern society, social media can prove to be an important tool to enhance knowledge among communities [10].

Most of the participants in our study (93.2%) agreed that fever, fatigue, dry cough, and myalgia are the main clinical symptoms of COVID 19. Around 4.3% were unsure, which is not surprising considering that a range of new symptoms like dysgeusia and anosmia have been noticed in COVID patients with time as the pandemic is progressing. In some countries, children affected by COVID 19 are showing signs and symptoms of Kawasaki disease like illness [11].

The majority of participants were of the opinion that the incubation period of the virus is 1-14 days, which is probably due to the information circulating regarding the virus with the isolation period for symptomatic individuals advised as 14 days [12].

Over 90% believed that those who are elderly or have chronic illnesses are more likely to be severe cases; which has been observed as the trend across the world. Despite this, young persons with no chronic illness are not entirely safe from this disease and about 80% agreed with this fact. It was reassuring to see that 92.8% of the participants understood

that persons with COVID-19 could transmit the virus to others even when symptoms were not present. The understanding of this knowledge is essential as people need to recognize the importance of isolation to prevent spread of the infection to others, even if they have mild or no symptoms.

Almost 97% agreed that individuals should avoid going to crowded places and avoid taking public transportations to prevent the spread of infection. This understanding is crucial especially among the general population and this is the key for success of lockdowns being implemented to curb the rapid spread of the infection.

While most of the respondents (98.1%) in our study believed that there is no known cure for the viral disease as of today; 83.2% did not believe that antibiotics had any role to play in the prophylaxis or treatment of COVID 19. Moro et al in an Italian questionnaire based study, found majority of their respondents (74.5%) from Milan answered correctly regarding the unavailability of a specific drug or vaccine for COVID-19 [13]. A starkly contrasting finding was observed by Parikh et al in their survey about COVID-19 amongst HCWs, wherein only a minority (28.9%) were aware that there was no cure for the infection as of now [14]. There are many clinical trials underway for potential therapeutic and prophylactic options including antivirals, convalescent plasma therapy and vaccine candidates; however, to date no agent has shown proven efficacy [15].

About 68% believed that there is no evidence that a dog, cat or any pet can transmit COVID-19; and over 15% were not sure while another 15% believed this to be a false statement. During the time of circulation of this survey there were no reports of pets being able to transmit the SARS-CoV-2 virus. However recent data is emerging wherein animals like cat, tigers and lions have tested positive for the virus with a theoretical risk of transmission [16].

Various levels of PPE for HCWs have been advised by the World Health Organization depending on the risk of possible exposure to infection. Over three quarters of the respondents (73.6%) were aware of the levels of PPE while almost a quarter (23.1%) was partially aware about them. Similarly Modi et al, in a study conducted in Mumbai, India observed 79% of their participants to be aware of various personal protective equipment (PPE) recommended for use in suspected COVID-19 patients in healthcare setting [17].

About 80% of the respondents in our survey felt vulnerable at work at some point or the other due to lack of PPE. Similar fears have been reported across the world amongst healthcare workers. The survey conducted by Zhou et al echoed similar trends wherein around 85% of the surveyed HCWs were afraid of becoming infected at work [18]. Despite there being abundance guidance on the levels of PPE and its need to ensure protection to healthcare workers, there has been a constant debate on its availability and compliance to standards.

The attitude aspect of the questionnaire was aimed to gain perspective into what the health care workers in the UK thought of the pandemic situation. In an unprecedented scenario where all NHS frontline workers were overworked with their nature of work being compared to the army during World War, most NHS workers seemed to be upbeat about the future with respect to COVID-19 and its control. 87% were positive that the pandemic would be eventually controlled and 83% had confidence in the NHS to overcome this battle. However, over half of the respondents (62%) felt the government was not doing enough for the crisis. The confidence of HCWs in their government seemed to be much higher in India as observed by Parikh et al, where 87.1% expressed their trust in the current government [14].

The correlation of knowledge with attitude was found to be insignificant in the study (Pearson's coefficient: -0.058; p= 0.409). The overall attitude seemed to be positive among the participants in this study. This finding was echoed in a systematic review of KAP studies on COVID-19 conducted by Puspitasari et al, where five out of seven studies found a good and optimistic attitude among respondents [10]. However, data from certain developing countries show low levels of confidence among HCWs. Olum R et.al [7].reported that the HCWs in Uganda were less confident about the outcome of this pandemic and felt that their country was not in a good position to tackle the crisis.

Majority of healthcare workers (93%) had not visited family or friends in the high risk group in line with government advice at the time. They had been mindful about the government advice and careful in protecting their vulnerable population.

Over three quarters reported that they wore mask and gloves at work, either full time or most time and 42.8% said they practiced social distancing at work by standing at 2 feet from patients and colleagues. However, over 90% did not wear a mask when leaving home for a non-work related job. This is in contrast to the practices observed in countries like China, where almost 90% of the general population agreed to wearing masks when stepping out of the house [19].

An interesting trend observed was that 42% believed in stocking up essential items such as groceries. This was amidst fear of a national food crunch in the United Kingdom after the initial lockdown was declared.

Though the number of cases in the UK and rest of Europe had declined, a second wave is now imminent and it is all the more important for the governments, people and frontline health-workers to be better prepared and to equip themselves with the knowledge to face another wave. Therefore, it is crucial to understand the mindset of COVID warriors who have faced this situation the first time around. Incorporating the learnings and experiences from the first wave will certainly help in combating a second peak and in minimizing the potential devastating impact a second wave can have on the healthcare systems across the globe. There are only a few published KAP studies with respect to the COVID 19 pandemic; fewer still amongst healthcare workers. The NHS is regarded very highly amongst healthcare systems in the world and is the pride of UK. This study is the only one in literature looking at the knowledge, attitudes and perceptions of healthcare workers in the NHS.

However we acknowledge that our study has certain limitations. The participating cohort in this survey consisted of HCWs from only a single tertiary health board in Wales, UK. Also, this study did not use a probability based technique of sampling, which is another limitation of our study. The limited regional cohort of participants, and the combination of convenience and snowball sampling used in this study make it difficult for the findings to be extrapolated to other populations. Larger studies utilising a random method of sampling are required not only amongst healthcare workers but also in the general community to gauge their knowledge, attitude and practices regarding this pandemic.

6. CONCLUSION

Our survey highlighted that the majority of healthcare workers had a good understanding about this pandemic. Most of them had an optimistic attitude towards control of this outbreak, and their practices reflected a safe approach towards activities at work and outside. Further studies in larger populations can help assess knowledge gaps, and explore beliefs and behavioural patterns amongst people regarding COVID-19; and will contribute to planning and implementation of healthcare delivery services likewise. This is especially pertinent as we gear up for a possible second wave of this disastrous pandemic in Europe and the rest of the world.

Figure 1: Distribution of Healthcare workers according to profession

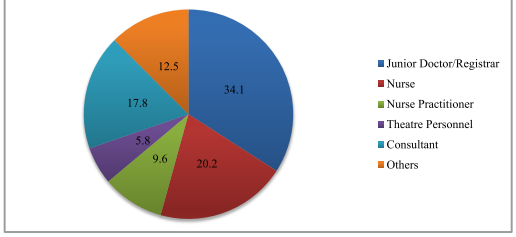
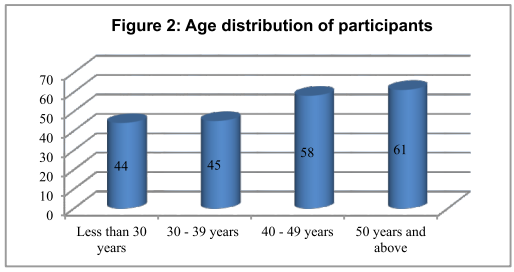
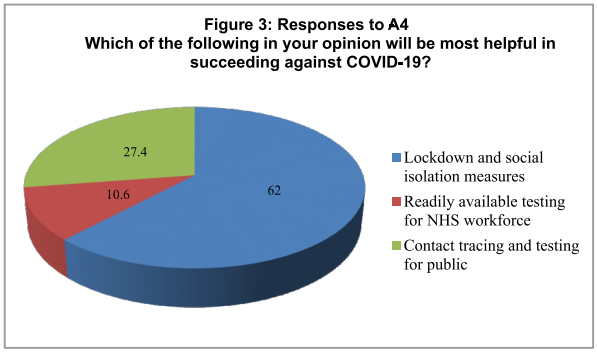
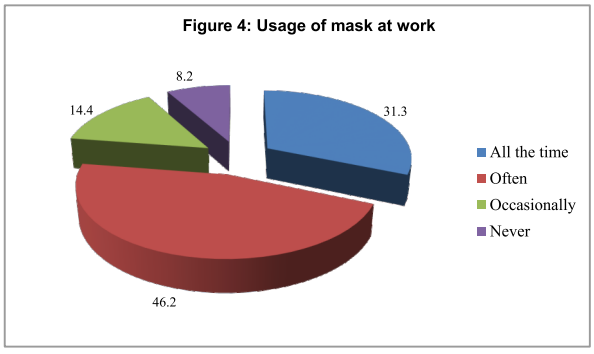


Figure 2: Age distribution of participants







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