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KNOWLEDGE AND PERCEPTIONS TOWARDS NOVEL CORONAVIRUS (COVID-19) AMONG LEBANESE HEALTHCARE WORKERS

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Abstract

During the first week of March, the surge of coronavirus disease 2019 (COVID-19) cases reached over 100 countries with more than 100,000 cases. Healthcare authorities have already initiated awareness and preparedness activities beyond borders. A poor understanding of the disease among healthcare workers (HCWs) may result in delayed treatment and the rapid spread of infection. This study aimed to investigate the knowledge and perceptions of HCWs about COVID-19. A cross-sectional, web-based study was conducted among HCWs about COVID19, where a 23-item survey instrument was developed and distributed randomly to HCWs using google forms and email portals. The majority of the sample were females (75.5%) and have been working as registered nurses (50.3%), where their main source of information was their hospital and the Ministry of Health, followed by the social media the results of the study showed that the healthcare providers had adequate knowledge and positive perception regarding the prevention of COVID-19, however they have expressed concerns regarding contracting the infection and infecting family members. There has been a significant difference between those who have attended lectures and trainings and who have not on the level of the knowledge and perceptions (P

1. INTRODUCTION

Coronavirus infections (CoV) are relatively new respiratory pathogens which have started to be detected since 1965 and have beenare reported to cause disease spanning from mild cold to serious acute respiratory syndrome (SARS) (Yin & Wunderink, 2018). Coronavirus is a zoonotic virus, which can be spread by contact amongst humans and animals (Li, Song, et al, 2020). There were several epidemic incidents in 2002 (SARS), with ~800 fatalities, and in 2012 (Middle East Respiratory Syndrome: MERS-CoV), with 860 fatalities (Li, Guan, et al, 2020; Bhagavathula et al, 2020). Nearly 8 years after the MERS-CoV outbreak, the latest spread of novel coronavirus (COVID-19) has identified as a worldwide pandemic and a major public health concern in Wuhan City, Hubei Province, China (Lai et al, 2020). On 30 January 2020, COVID-19 was deemed a public health crisis of global importance by the World Health Organization (WHO). Surprisingly, a catastrophic amount of new cases has been identified internationally during the first week of March and COVID-19 has erupted as a pandemic. As of 12 March 2020, there were more than 125,000 verified cases registered throughout 118 countries and more than 4,600 fatalities (World Health Organization, 2020a). COVID-19 is transmitted via human-to - human propagation through droplet, feco-oral and direct touch and has a 2-14 day incubation duration (World Health Organization, 2020b). Before now, COVID-19 has not been specifically approved for antiviral therapy or vaccination. Hence, the most important action is the implementation of prevention steps to avoid contamination with COVID-19.

Healthcare workers (HCWs) are at a significant risk of contact in healthcare environments with infectious cases; thus, HCWs therefore likely to be at high risk of infection and possible spread. Misconceptions among HCWs have, in many instances, hindered the primary prevention and providing the appropriate care (Selvaraj et al, 2018), and contributed to the fast transmission of pathogens in hospitals (McCloskey, 2020), and placed life at risk for patients. The COVID-19 outbreak in this respect provides a rare incentive to explore the extent of awareness and attitudes of HCWs during this public health emergency. The WHO and Centers for Disease Control and Prevention (CDC) has released guidelines on the prevention and management of COVID19 for HCWs by the end of January (WHO, 2020; CDC, 2020). The WHO has also organized many digital COVID-19 training sessions and manuals in different languages to improve prevention approaches, including awareness raising and preparation of HCWs (WHO, 2020b).

The reality that HCWs in the disease chain are at risk of contamination is a crucial concern, as HCWs aid in containing the spread. Therefore, it is important to take all practicable steps to monitor the spread of the infection to HCWs, first by determining the predispositions for infection and then by taking effective steps to reduce such threats. It is well known that propagation of the infection among HCWs is correlated with overpopulation, lack of room ventilation facilities and contamination of the surrounding. It is possibly exacerbated, though, by the reality that certain HCWs are inadequately informed of infection control practices (Wu & McGoogan, 2020). Understanding of a disease would affect the attitudes and activities of HCWs, as inappropriate attitudes and practices directly raise the likelihood of infection (McEachan et al., 2016). Knowing the knowledge, attitudes, and practices of HCWs (KAPs) and potential risk factors helps to anticipate the results of expected behaviour. Therefore, if HCW's KAPs on the virus and variables impacting their attitudes and actions can be identified quickly in the early stages of the pandemic, therefore this knowledge will advise appropriate preparation and policy throughout the crisis and assist HCWs in prioritizing prevention.

Nonetheless, a survey of predominantly Asian HCWs and medical students showed that they had inadequate COVID-19 awareness but had favorable attitudes towards COVID-19 transmission mitigation (Bhagavathula et al., 2020). To our awareness, there was no research carried out in Lebanon explicitly among HCWs to test KAPs against COVID-19. Therefore, this study aimed at assessing the knowledge and perceptions of healthcare workers in Lebanon regarding COVID_19.

2. METHODOLOGY

Research Design

This thesis has employed a descriptive cross-sectional research design. This study approach helps the investigator to gather comprehensive and analytical data at one point in time, making it easier to identify patterns and anomalies common in the research sample.

Sample

A survey was employed in this research study, where the study sample have comprised of 169 healthcare practicing professionals specialized in various health professions. A convenient sampling technique was used as during quarantine access to such a population was challenging. The sample was distributed among various Lebanese governorates thus representing multiple sectors and areas.

Tool

The researcher gathered the data using a pre-tested self-administered digital survey composed of 23 elements. The questionnaire comprised of:

1. A sociodemographic data sheet, which surveyed the age, gender, and profession of the participants.
2. The COVID-19 knowledge and perceptions questionnaire entails 23 close ended dichotomous questions that are answered by either YES or NO. The questions revolved around the sources of information that the participants have procured their knowledge regarding COVID-19 from, knowledge of the manifestations, origin, chain of infection and propagation of the diseases, and prevention. As for the perception of COVID questions they revolved around prevention as well as concerns regarding contracting and spreading the infection.

The questionnaire could be filled within the time limit of 5-10 minutes maximum, which meant that it was time efficient. A pilot study was also carried out to determine if the questionnaire measured what it was supposed to measured, where the survey was distributed among 16 health professionals that have not been included in this study and the questions were revised accordingly. The instrument was also subject to internal consistency testing which have revealed a Cronbach alpha value of 0.78, which have proven the validity of using the tool to measure knowledge and perceptions of the healthcare workers. A previous study has also shown that this survey measures what it is supposed to measure where a Cronbach alpha value of 0.78 (>0.70) which supports the use of the tool (Saqlain et al., 2020).

Ethical Considerations

The following ethical requirements were taken into consideration during the study:
- Permission to carry out the study from Ethics Committee of Beirut Arab University was procured.
- Anonymity of the study subjects was maintained; no names were recorded during data collection and reporting.
- Written consent was obtained from each of the participants at the respective clinical settings.

Procedure

A digital questionnaire was created through the Google forms portal, which the participants have been redirected to fulfill the survey form, were a convenient sampling technique was adopted. Upon being approved by the responsible authority referred to as institutional Review Board (IRB) at Beirut Arab University, the researcher has contacted the possible candidates through email after gathering their emails from national directories of order and syndicates and university webmail portals. The respondents were asked to voluntarily take part in the research after explaining the aim of the study as well as any potential risks or benefits and asking for written informed consent. The researcher made sure to inform the respondents that the research will be anonymous, and that no data will be disclosed. After procuring informed consent, the link to the questionnaire was sent to the interested respondents, then data was collected and analyzed through SPSS.

Data Analysis

Data was entered and analyzed in Statistical Package for Social sciences (SPSS software version 25). Descriptive analysis was applied to calculate the frequencies and proportions. Independent T-tests and ANOVA tests were used to compare the knowledge and perceptions among study groups. A p-value of less than 0.05 was considered statistically significant.

Table 1: Sociodemographic data		N	%
Gender	Female	128	75.5
	Male	41	24.3
Age	20-25	57	33.7
	26-30	64	37.9
	31-35	28	16.6
	36-40	9	5.3
	41-44	6	3.6
	45+	5	3.0
Occupation	Practical Nurse	16	9.5
	Registered Nurse	85	50.3
	Doctor	13	7.7
	Pharmacist	19	11.2
	Lab technician	15	8.9
	Other	21	12.4

Table 2: Sources of information		N	%
Attended lectures /Discussions about Coronavirus	YES	120	71
	NO	49	29
Source of knowledge about Coronavirus	Ministry of Health	50	29.6
	Social Media	43	25.4
	Hospital	67	39.6
	TV	9	5.3

3. RESULTS

Socio-demographic Characteristics

The study sample comprised of one hundred and sixty-nine healthcare workers (N=169) from, where 128 (75.5%) of them were females while 41 (24.3%) were males. The participants' ages varied among different categories, where 64 (37.9%) of them aged between 26 and 30 while 57 (33.7%) of them aged between 20 and 25. Eighty-five (50.3%) of the participants were registered nurses, while 16 (9.5%) were practical nurses, and 13 (7.7%) were doctors (Table 1)

Sources of knowledge

Upon carrying out descriptive analysis, the results of this study showed that 120 (71%) of the healthcare workers who participated in this study had the chance to attend lectures and participate in discussion regarding COVID-19. The results also showed that 67 (39.6%) of the participants acquired their information about COVID-19 from the hospital that they work in, while 50 (29.6%) of them acquired information from the Lebanese Ministry of Health, and 43 (25.4%) depended on social media for COVID019 information (Table 2).

Knowledge of healthcare workers regarding COVID-19

Descriptive analysis was carried out to evaluate the knowledge of healthcare workers regarding COVID-19. The results showed that there is adequate knowledge among the surveyed participants on the level of most concepts related to COVID-19; however, some knowledge gaps has been prevalent among healthcare workers, where 107 (63.3%) of them have agreed that "Coronavirus is thought to be originated from bats" (Table 3).

Table 3: Knowledge regarding COVID-19			
		N	%
Coronavirus is thought to be originated from bats	NO	62	36.7
	YES	107	63.3
Coronavirus is transmitted through air, contact, fecal oral routes	NO	63	37.3
	YES	106	62.7
Headache, fever, cough, sore throat, and flue are symptoms of Coronavirus	NO	7	4.1
	YES	162	95.9
Incubation period of Coronavirus is between 2 to 14 days	NO	5	3.0
	YES	164	97.0
Coronavirus leads to pneumonia, respiratory failure and death	NO	2	1.2
	YES	167	98.8
Supportive care is the current treatment for Coronavirus	NO	14	8.3
	YES	155	91.7
Antibiotics are first line treatment for Coronavirus	NO	147	87.0
	YES	22	13.0
Hand hygiene, covering nose and mouth while coughing, and avoiding sick contacts can help in the prevention of Coronavirus	NO	0	0.0
	YES	169	100.0

Perception of healthcare workers' towards COVID-19

The majority of the healthcare workers who participated in this study showed a positive perception regarding COVID-19, where 88 (52.1%) of the participants have reported that COVID-19 is not fatal, 141 (83.4%) of them agreed that if COVID-19 vaccine was available they would have it, 168 (99.4%) have agreed that washing hands with soap and water can help in prevention of Coronavirus transmission, and 157 (92.2%) of them have agreed that if they contract Coronavirus ,they will accept isolation in health facilities. However, the results of this study showed that healthcare workers have concerns regarding COVID-19, where 165 (97.6%) believed that healthcare workers are at high risk of contracting COVID-19, 69 (40.8%) thought they will contract the illness, while 152 (89.9%) were worried that one of their family members may get an infection (Table 4).

Table 4: Perception of Healthcare workers' towards COVID-19			
		N	%
Coronavirus symptoms appear in 2 to 14 days	NO	16	9.5
	YES	153	90.5
Coronavirus is fatal	NO	88	52.1
	YES	81	47.9
Flu vaccine is sufficient for preventing Coronavirus	NO	162	95.9
	YES	7	4.1
If Coronavirus vaccine was available, I would have it	NO	28	16.6
	YES	141	83.4
During the outbreak, eating well - cooked meat and safely handled meat is safe	NO	17	10.1
	YES	152	89.9
Sick patients should share their recent travel history with health care providers	NO	8	4.7
	YES	161	95.3
Disinfect equipment and working area in wet markets at least once a day	NO	20	11.8
	YES	149	88.2
Washing hands with soap and water can help in prevention of Coronavirus transmission	NO	1	.6
	YES	168	99.4
If getting Coronavirus, you will accept isolation in health facilities	NO	12	7.1
	YES	157	92.9
You think you will probably get illness	NO	100	59.2
	YES	69	40.8
You are worried one of your family members may get an infection	NO	17	10.1
	YES	152	89.9
Healthcare workers are at a higher risk for Coronavirus infection	FALSE	4	2.4
	TRUE	165	97.6

Difference in COVID-19 knowledge according to participants' characteristics

Inferential statistics were carried out to determine the differences in COVID-19 knowledge according to the characteristics of the participating healthcare workers. An independent T-test was conducted to determine the difference in knowledge between males and females, and the results showed that there was no difference except on the level of knowledge regarding symptoms (P=0.00) and incubation period (P=0.00) of COVID-19 infection. Another independent T-test was carried out to determine the difference in knowledge with regards to attending lectures about COVID-19 and the results showed highly significant differences in the level of knowledge regarding origin of the virus (P=0.00) which was a reported as a widespread misconception, transmission of the virus (P=0.01), as well as the use of antibiotics (P=0.00), where the ones who attended the lectures had higher levels of knowledge. However, the ANOVA-test showed no difference on the level of knowledge according to the source of information. As for the occupation, the ANOVA test showed a significant difference only on the level of knowledge regarding the transmission of the virus (P=0.02), while with regards to age, the ANOVA test revealed a significant difference only on the level of knowledge regarding the use of antibiotics (Table 5).

Table 5: Difference in COVID-19 knowledge according to participants' characteristics									
	Gender		Age		Occupation		Sources of Information		Attended Lectures	
	F	P-value	F	P-value	F	P-value	F	P-value	F	P-value
Coronavirus is thought to be originated from bats	2.99	0.08	0.81	0.54	1.86	0.10	0.33	0.80	16.44	**0.00**
Coronavirus is transmitted through air, contact, fecal oral routes	2.55	0.12	1.03	0.40	2.69	**0.02**	0.02	0.99	6.51	**0.01**
Headache, fever, cough, sore throat, and flue are symptoms of Coronavirus	17.61	**0.00**	0.21	0.95	1.66	0.14	0.91	0.43	3.18	0.07
Incubation period of Coronavirus is between 2 to 14 days	14.72	**0.00**	0.82	0.53	0.73	0.59	1.34	0.26	0.81	0.36
Coronavirus leads to pneumonia, respiratory failure and death	2.65	0.10	0.46	0.80	1.49	0.19	2.00	0.11	1.71	0.19
Supportive care is the current treatment for Coronavirus	3.53	0.06	0.29	0.91	0.52	0.75	1.34	0.26	1.75	0.18
Antibiotics are first line treatment for Coronavirus	2.16	0.14	2.30	**0.04**	0.99	0.42	1.10	0.34	13.85	**0.00**
Hand hygiene, covering nose and mouth while coughing, and avoiding sick contacts can help in the prevention of Coronavirus	-	-	-	-	-	-	-	-	-	-

Difference in COVID-19 perceptions according to participants' characteristics

Further inferential statistics were carried out, where an independent T-test was conducted to determine the difference in perceptions between males and females, and the results showed that there was no difference except on the level of "Washing hands with soap and water can help in prevention of Coronavirus transmission" (P= 0.00), "If getting Coronavirus, you will accept isolation in health facilities" (P=0.00), and "You are worried one of your family members may get an infection" (P=0.03) were females scored higher than males. Another independent T-test was carried out to determine the difference in perceptions with regards to attending lectures about COVID-19 and the results showed highly significant differences on the level of perceptions regarding COVID-19 onset (P=0.00), fatality (P=0.01), sharing recent travel history (P=0.03), and worrying about family members (P=0.00). The ANOVA test showed that the participating healthcare providers had significant differences according to age group on the level of accepting the coronavirus vaccine (P=0.02), believing that they would contract the illness (P=0.01), worrying about family members (P=0.05), and believing that they are at higher risk of infection (P=0.01). As for occupation, there were nonsignificant differences noted, while on the level of sources of information the perceptions varied significantly; "Coronavirus is fatal" (P=0.00), "If Coronavirus vaccine was available, I would have it" (P=0.03), "You are worried one of your family members may get an infection" (P=0.03) (Table 6).

Table 6: Difference in COVID-19 perceptions according to participants' characteristics										
	Gender		Age		Occupation		Sources of Information		Attended Lectures	
	F	P-value	F	P-value	F	P-value	F	P-value	F	P-value
Coronavirus symptoms appear in 2 to 14 days	1.20	0.27	0.25	0.94	0.90	0.48	0.02	1.00	10.68	**0.00**
Coronavirus is fatal	1.75	0.18	0.74	0.59	1.76	0.12	6.80	**0.00**	7.64	**0.01**
Flu vaccine is sufficient for preventing Coronavirus	0.28	0.59	0.60	0.70	0.93	0.47	0.43	0.73	0.00	0.96
If Coronavirus vaccine was available ,I would have it	1.27	0.26	2.79	**0.02**	0.68	0.64	3.05	**0.03**	0.62	0.43
During the outbreak, eating well -cooked meat and safely handled meat is safe	0.02	0.88	1.95	0.09	1.29	0.27	1.61	0.19	1.41	0.24
Sick patients should share their recent travel history with health care providers	3.11	0.07	0.48	0.79	1.12	0.35	0.47	0.70	4.69	**0.03**
Disinfect equipment and working area in wet markets at least once a day	1.54	0.21	1.27	0.28	0.39	0.86	0.10	0.96	0.72	0.40
Washing hands with soap and water can help in prevention of Coronavirus transmission	13.30	**0.00**	0.32	0.90	0.19	0.97	0.50	0.68	1.66	0.20
If getting Coronavirus ,you will accept isolation in health facilities	8.20	**0.00**	1.05	0.39	1.79	0.12	0.43	0.74	0.40	0.53
You think you will probably get illness	2.64	0.10	3.43	**0.01**	0.36	0.88	0.91	0.44	2.28	0.13
You are worried one of your family members may get an infection	4.71	**0.03**	2.28	**0.05**	1.29	0.27	3.07	**0.03**	11.61	**0.00**
Healthcare workers are at a higher risk for Coronavirus infection	0.00	0.94	3.54	**0.01**	1.24	0.29	1.44	0.23	3.48	0.06

4. DISCUSSION

COVID-19 is today a significant subject of debate in the news and among the general population, particularly among healthcare workers and patients. With the increasingly growing COVID-19 propagation intensifying concerns among the health community, particularly government authorities and health facilities, a significant problem emerges as to how we handle knowledge in periods of public health emergencies.

The results of our study showed that healthcare workers had high level of knowledge regarding COVID-19, where they acquired their knowledge from the hospitals that they work in and the ministry of health thus they are resorting to reliable sources of information, where the majority of them participants have attended lectures and participated in discussions about COVID-19. This is consistent with a recent study by Shi et al. (2020) which have assessed the knowledge and perceptions of medical staff in psychiatric hospitals and revealed that healthcare workers have been extensively equipped with proper and reliable knowledge regarding COVID-19, where elevated knowledge among the healthcare professionals have yielded in higher willingness to care for COVID-19 patients, therefore increasing coverage. Our results were also consistent with a study done in Egypt by Abdelhafiz et al. (2020) which have evaluated the knowledge and perceptions of Egyptians regarding COVID-19 and have found adequate knowledge levels where the most significant outlets of knowledge were innovative networks like social networking sites and the web, at the detriment of more mainstream media platforms. This was also partially in line with our results were, the participating healthcare providers reported the use of social media to be more than that of mainstream media such as TV. However, our results were inconsistent with a recent study that has been established in Bangladesh which revealed that the majority of the respondents depended on social media for information regarding COVID-19 propagation, symptoms and treatment, where the level of knowledge that has been recorded was quite poor (Kazi Abdul & Khandaker Mursheda, 2020). Also consistent with our findings, a recent study that has evaluated COVID-19 knowledge, preventive behaviors and risk perception among medical students and have found high level of knowledge among the respondents (Taghrir, Borazjani, & Shiraly, 2020) which was comparably higher than knowledge that was recorded during the MERS pandemic (Khan et al., 2014). Also compared to previous pandemics, during the 2015 Ebola virus epidemic, a review from Ethiopia revealed low awareness and stereotypes among healthcare professionals and recommended rigorous education targeting healthcare professionals (Abebe et al ., 2016). Further, a recent study carried out in India found moderate knowledge level among respondents regarding COVID-19 in nature, yet higher knowledge levels regarding preventive strategies (Roy et al., 2020).

In addition, the findings of our study have shown that healthcare workers conveyed a positive perception of COVID-19, yet they have indicated the perception of danger and worry associated with the disease, where the majority of them were worried about getting infected and even more concerned about any member of their families getting infected. This is consistent with by Abdelhafiz et al. (2020) which have found that respondents claimed that COVID-19 represented a life-threatening hazard and were worried about every member of their family's possible risk of contracting the disease. Our results were also comparable to that of Kazi Abdul & Khandaker Mursheda (2020) which have indicated that respondents displayed positive perceptions regarding the preventive measures that should be taken to contain the outbreak of COVID-19. Comparably, our results come in line with of Taghrir, Borazjani, & Shiraly (2020) which have found that medical students reported high level of preventive prevention higher than that reported during the MERS pandemic (Kim and Choi, 2016) and rather lower risk perception.

Moreover, the results of our study also showed that the healthcare personnel who attended lectures and discussions on COVID-19 had higher levels of knowledge especially on the level of the misconception that was prevalent among them regarding the origin of COVID-19, as well as transmission and treatment of the disease. This was consistent with Shi et al. (2020) as well as with previous research which have revealed that learning experiences that are furnished by clinical facilities to its employees through continual education sessions is crucial for the preparation and dealing with pandemics (Kanjee et al., 2011; Anuradha and Dandekar,

2014). Hidiroglu et al. (2010) confirmed that empowering health professionals by promoting their capacity to obtain and utilize evidence-based knowledge is vital. Certain findings also shown that the introduction of adequate instruction and precautions increased the ability of team members to function (Odegard et al., 2011).

Furthermore, the findings of our study have shown that age and occupation did not contribute to a significant difference, while gender revealed only few differences on the level of knowledge and perceptions of COVID-19. This was inconsistent with Abdelhafiz et al. (2020) which have found that respondents who were older scored lower on the level of knowledge compared to younger age groups who were more informed. Our results however were consistent with that of Shi et al. (2020) which have found that age, gender, and occupation did not contribute to ant differences in the perceptions and mainly the willingness to care for COVID-19 patients. Yet, in Bangladesh, age and occupation did correlate negatively with the level of knowledge acquired by the respondents from medical staff, healthcare workers and students (Kazi Abdul & Khandaker Mursheda, 2020). Further, our results were inconsistent with Taghrir, Borazjani, & Shiraly (2020) which have revealed that females have indicated lower risk perception than males, whereas in our study both had high perception scores.

5. CONCLUSION AND RECOMMENDATIONS

Healthcare workers in Lebanon have adequate knowledge despite the minor gaps regarding the origin of COVID-19, where they obtain their information from the ministry of health and their respective hospitals; where the majority of them have attended lectures and participated in discussions on COVID-19. The Lebanese healthcare workers who participated in this study also have positive attitudes toward the prevention of COVID-19, yet they are worried and concerned about them contracting the infection and spreading it to their community and family. Attending lectures and trainings on COVID-19 has proven to mitigate the level of both knowledge and perceptions as well as alleviate worries. Upon the results of this study, it is recommended that health authorities in Lebanon implement intensive and regular awareness sessions regarding COVID-19 to the healthcare workers as well as the general public focusing on the preventive measures and alleviating concerns and worries which might lead to anxiety and panic. Campaigns should also target the issue of fake news and myths that revolve around the pandemic through training sessions that would prepare healthcare workers to educate the public regarding such misconceptions through providing them with portals and strategies of health communication. The research also recommends further studies that measures the attitudes and practices of healthcare workers regarding COVID-19, as well as the effect of the pandemic on their professional conduct as well as their occupational and mental wellbeing.

Limitations

This study's drawbacks are illustrated the small sample size accessible which obstructs the generalization of the findings.

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