Measuring the level of knowledge and awareness about COVID-19 among the community of a college in Dubai: A comparative study between participants of health sciences and non-health sciences backgrounds.

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Submitted to: Journal of Medical Internet Research
on: August 27, 2020

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Measuring the level of knowledge and awareness about COVID-19 among the community of a college in Dubai: A comparative study between participants of health sciences and non-health sciences backgrounds.

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Abstract

Background: COVID-19 which has resulted worldwide pandemic, prompted various healthcare organisations to take meticulous measures to stop or slow down the spread of it. This included: locking down of cities, physical distancing and using various protective methods. Adherence to these measures requires the whole society to amend their behaviour, which cannot be done without having sufficient knowledge and awareness about the pandemic. Since the outbreak is a viral infection, it is expected that people with health backgrounds would have more knowledge and awareness about COVID-19. Therefore, this study aims to compare the level of knowledge and awareness of health sciences to non-health sciences faculty, staff and students at a Females College in Dubai towards COVID-19.

Objective: This study aims to compare the level of knowledge and awareness of health sciences to non-health sciences faculty, staff and students at a Females College in Dubai towards COVID-19.

Methods: A cross-sectional observational descriptive study was conducted using a self-administered online questionnaire to test the hypothesis. Participants were recruited via emails and/ or during their virtual lectures randomly.

Results: Findings brought to light that in general there was a high level of knowledge and awareness amongst participants irrespective of their background. The most popular source of information was the social media. Level of knowledge was significantly higher amongst the health sciences participants regarding the source of pathogen, and certain protective techniques, while they both were aware of the incubation period, symptoms, transmission routes, recovery and mortality rates.

Conclusions: Overall, there was a high level of knowledge and awareness amongst participants irrespective of their background. Yet, there were some areas where the knowledge of health sciences group was higher than the non-health sciences group. Assessing knowledge and awareness was important to ensure that people understand and consequently change their behaviour to mitigating the spread of COVID-19.

(JMIR Preprints 27/08/2020:23908)
DOI: https://doi.org/10.2196/preprints.23908

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Abstract

- Background and aim: COVID-19 which has resulted worldwide pandemic, prompted various healthcare organisations to take meticulous measures to stop or slow down the spread of it. This included: locking down of cities, physical distancing and using various protective methods. Adherence to these measures requires the whole society to amend their behaviour, which cannot be done without having sufficient knowledge and awareness about the pandemic. Since the outbreak is a viral infection, it is expected that people with health backgrounds would have more knowledge and awareness about COVID-19. Therefore, this study aims to compare the level of knowledge and awareness of health sciences to non-health sciences faculty, staff and students at a Females College in Dubai towards COVID-19.

- Methodology: A cross-sectional observational descriptive study was conducted using a self-administered online questionnaire to test the hypothesis. Participants were recruited via emails and/ or during their virtual lectures randomly. Results were then analyzed using Chi-square or Fisher Exact test for categorical data to compare the differences in proportion.

- Results: Findings brought to light that in general there was a high level of knowledge and awareness amongst participants irrespective of their background. The most popular source of information was the social media. Level of knowledge was significantly higher amongst the health sciences participants regarding the source of pathogen, and certain protective techniques, while they both were aware of the incubation period, symptoms, transmission routes, recovery and mortality rates.

- Conclusion: Overall, there was a high level of knowledge and awareness amongst participants irrespective of their background. Yet, there were some areas where the knowledge of health sciences group was higher than the non-health sciences group. Assessing knowledge and awareness was important to ensure that people understand and consequently change their behaviour to mitigating the spread of COVID-19.

1. Backgorund

A novel coronavirus was first identified in December 2019, in Wuhan city, China, which is known as SARS-

CoV-2, resulting in the outbreak of a respiratory illness known as COVID-19. In general, coronaviruses can cause several respiratory infections in humans, ranging from a common cold to more severe diseases such as the Middle East Respiratory Syndrome (MERS), and Severe Acute Respiratory Syndrome (SARS) [1]. Fever, fatigue and dry cough are the most common symptoms for COVID-19 [2–4]. More serious symptoms might emerge such as difficulty in breathing or shortness of breath, chest pain, and loss of speech or movement, which will require an immediate medical intervention [2–4]. The virus gets transmitted rapidly, showing an exponential increase in the number of cases worldwide [5]. There is also a strong evidence suggesting that it can be transmitted by people who manifest mild symptoms or during the incubation period before showing symptoms [6]. Hence, COVID-19 is more difficult to contain in comparison to the MERS or SARS [5].

Awareness plays a pivotal role in preventing and controlling the infection, and changing behavior can alter the spread of the infectious agent [7]. In fact, plenty of the strategies and measures that would help to slow down the spread of the virus are behavioural (for example, wearing masks, physical distancing and more). According to the Health Belief Model (HBM), which was used to gauge this study, it is unlikely that people would aim to address a problem they are not acquainted with [8, 9]. Having more knowledge about a disease will result in altering constructs of the HBM, such as perceived susceptibility and severity [10]. Therefore, improving patient compliance to restrictions imposed by governments and health authorities to contain the infection [10]. Knowledge and awareness help to assess the plausibility of getting the disease and/ or the severity the disease, and this might result in altering their behaviour to comply with the regulations [8, 9, 11–13]. Since the outbreak is a viral infection, it is expected that people with health backgrounds would have more knowledge and awareness about COVID-19. Therefore, this study aims to compare the level of knowledge and awareness of health sciences to non-health sciences faculty, staff and students at a Females College in Dubai towards COVID-19.

2. Hypothesis and null hypothesis

2.1 Hypothesis:

There is a difference in the level of knowledge and awareness of COVID-19 amongst participants with health sciences (HS) background in comparison to participants with no health sciences (non-HS) background.

2.2 Null Hypothesis:

There is no difference in the level of knowledge and awareness of COVID-19 amongst participants with health sciences (HS) background in comparison to participants with no health sciences (non-HS) background.

3. Methodology

3.1 Study design

This is a cross-sectional observational descriptive study, which was conducted at an academic institution (Females College) in Dubai to test the hypothesis delineated earlier.

3.2 Sample

-Recruitment:

Participants were approached randomly using two techniques:

a) Electronic invitations sent via emails containing both a direct link to the questionnaire and a Quick Response code (QR) that can be scanned using the mobile camera which opens up the questionnaire.
b) During the virtual lectures, instructors within different programs and departments projected the QR code at the beginning of session for students to scan and answer.

-Characteristics:

Participants had to meet the following inclusion criteria to be eligible to participate: adults above or equal to the age of 18, both genders, irrespective of their educational level (not less than high school), or their specialty, program or department. Also, participants should be either studying or working at the Females College in Dubai. They should consent electronically to be eligible for participating and able to access the survey. A total of 212 participants answered the online questionnaire.

3.3 Data collection

Self-administered questionnaire (19-items) was administered electronically. This was administered over a period of 2 weeks (end of March and beginning of April 2020), during the first two weeks of the online/ virtual classes. To be able to proceed to the questionnaire the participants had to consent electronically “If you click START THE SURVEY then you agree to participate in this study”. The questionnaire was designed to collate the following information:

- Demographics
- Source of information
- Medical related knowledge about COVID-19
- Knowledge about the transmission modes
- Knowledge about the protection methods
- Knowledge about the treatment, recovery and prognosis

3.4 Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Science (SPSS) software program for Windows (version 26.0). Frequencies and percentages were described. Hypothesis testing was completed either using Chi-square or Fisher Exact test for categorical data to compare the differences in proportion. The significant level was set at $P<0.05$.

3.5 Ethical approval

This study was approved by the Institutional Research Committee of the Higher Colleges of Technology, and an electronic ethical consent forms were obtained from participants before answering the questionnaire. The consent form incorporated information about the study aim, protection of anonymity and usage of data. Additionally, this study was conducted according to the Declaration of Helsinki [14].

4. Results

4.1 Participants' Demographics:

A total of 212 participants answered the electronic questionnaire. The vast majority of respondents were females (Table 1). Most of the respondents were less than or equal to 30 years old (71.5%), therefore it was expected to have the majority of them with high school as the highest degree (53.3%). Participants from 7 divisions and various programs have participated as seen in Table 1.

Table 1. Demographics	
Demographic parameter	Frequencies (Percentages – approximate)
Age Groups	
18 – 20	86 (40.5%)
21 – 30	66 (31%)
31 – 40	18 (8.5%)
> 40	42 (20%)
Gender	
Male	33 (16%)
Female	179 (84%)
Highest Educational level	
High School	113 (53.3%)
Bachelor	37 (17.5%)
Master	32 (15.1%)
Doctoral	18 (8.5%)
Others	12 (5.6%)
Occupation	
Student	149 (70.3%)
Academic Staff	47 (22.2%)
Non-Academic Staff	16 (7.5%)
Academic Program/ Division	
Applied media	18 (8.5%)
Business	25 (11.8%)
Computer and information science	31 (14.6%)
Education	3 (1.4%)
Engineering	26 (12.3%)
Health Sciences	66 (31.1%)
Professional Careers	2 (0.9%)
Other divisions	25 (11.8%)

4.2 Sources of information

Most participants obtained their information about COVID-19 from the social media (N=172, 81%), followed

by other media channels (N=145, 68%). In addition, family, college and friends were also found to be important sources as per 53%, 48.5% and 48% of participants, respectively (Figure 1).

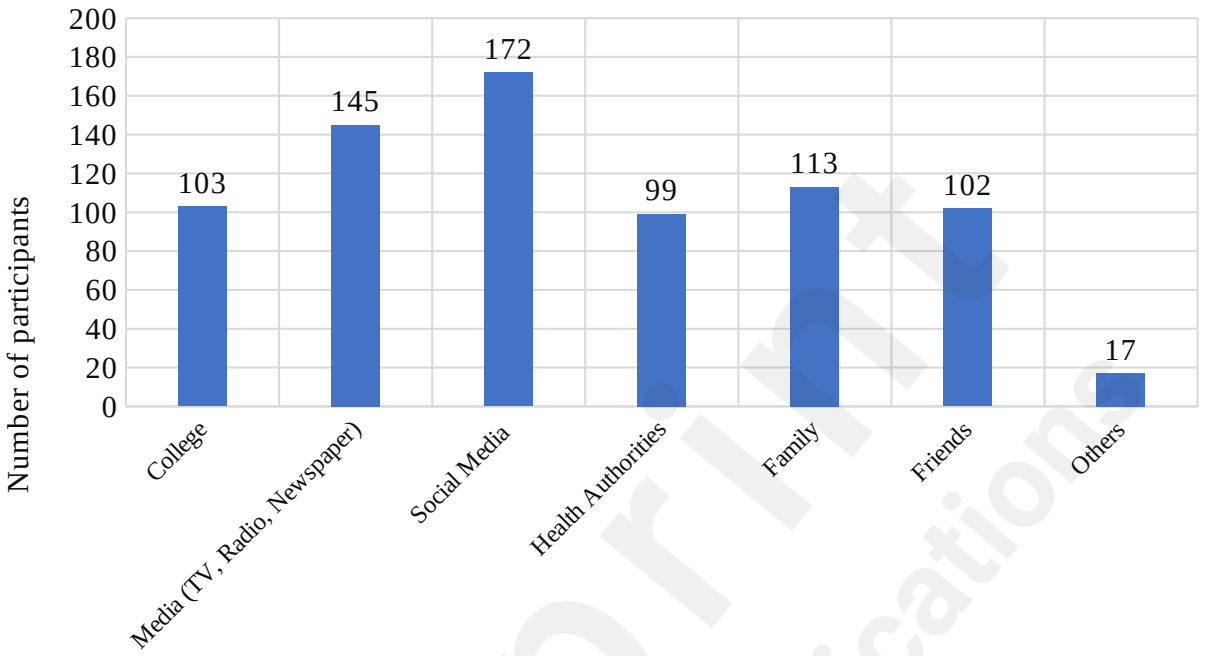


Figure 1: Sources of information

4.3 General knowledge about COVID-19

4.3.1 Source of pathogen:

Sixty-eight percent of participants (N=144/ 212) correctly identified the causative pathogen 'virus'. A higher percentage of HS answered correctly, where 78.8% of HS participants choose viruses [N=52], compared to 63% [N=92] from the non-HS. This difference was statistically significant (p=0.023).

4.3.2 Incubation period:

Most of the participants (79%, N=144/ 212) correctly identified the duration of virus incubation (2 to 14 days). Their knowledge was consistently high in both sub-groups (77.3% in HS and 79.5% in non-HS), and this minor difference was not statistically significant (p=0.719) as seen in Figure 2.

4.3.3 Symptoms:

Ninety-four percent (94.8%) of participants (N=201/ 212) correctly thought that COVID-19 symptoms are similar to that of the common cold. The minor difference between subgroups (95.5% of HS and 94.8% of non-HS) was not found to be statistically significant (p=0.776), therefore the null hypothesis was accepted (Figure

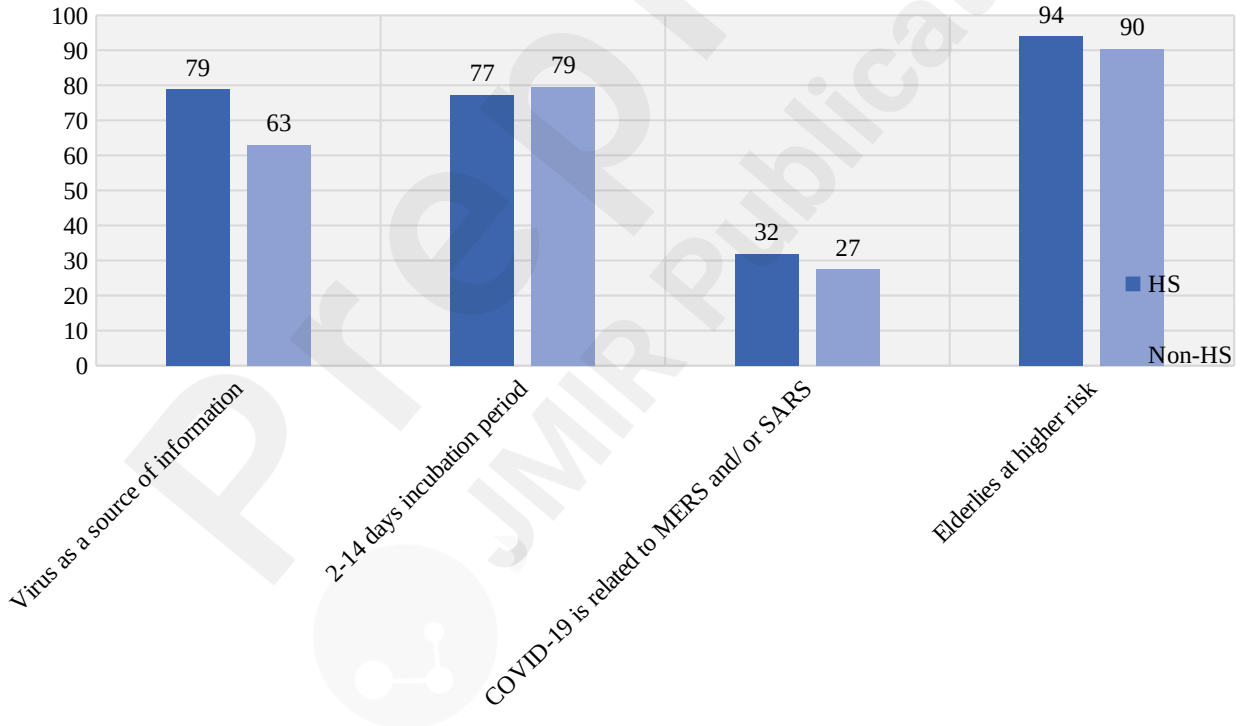
2).

4.3.4 Is the causative agent of COVID-19 same as the one causing MERS or SARS?

Seventy-one percent of participants (N=151/ 212) thought that the causative agent of COVID-19 is different from MERS or SARS. When comparing both sub-popoulations, it was found that 68.8% (N=45) of the HS, and 72.6% (N=106) of the non-HS thought that the causative agent of COVID-19 is not the same as the one causing MERS or SARS. As the difference was not found to be statistically significant (p=0.510), the null hypothesis was accepted (Figure 2).

4.3.5 Elderlies and their susceptibility to get infected with COVID-19:

Most of the participants (91.5%) irrespective of their background thought that elderlies are at a high risk for getting infected with COVID-19 (N=194/ 212). 93.9% of HS, and 90.4% of non-HS thought that elderlies at higher risk, and the difference was not found to be statistically significant (p=0.393), hence, the null hypothesis was accepted (Figure 2).



* Statistically significant difference between HS and non-HS.

Figure 2 General knowledge about COVID-19

4.4 General knowledge about transmission of COVID-19

4.4.1 Is COVID-19 highly contagious?

Irrespective of participants' background, majority (90%) of participants were totally aware that the COVID-19

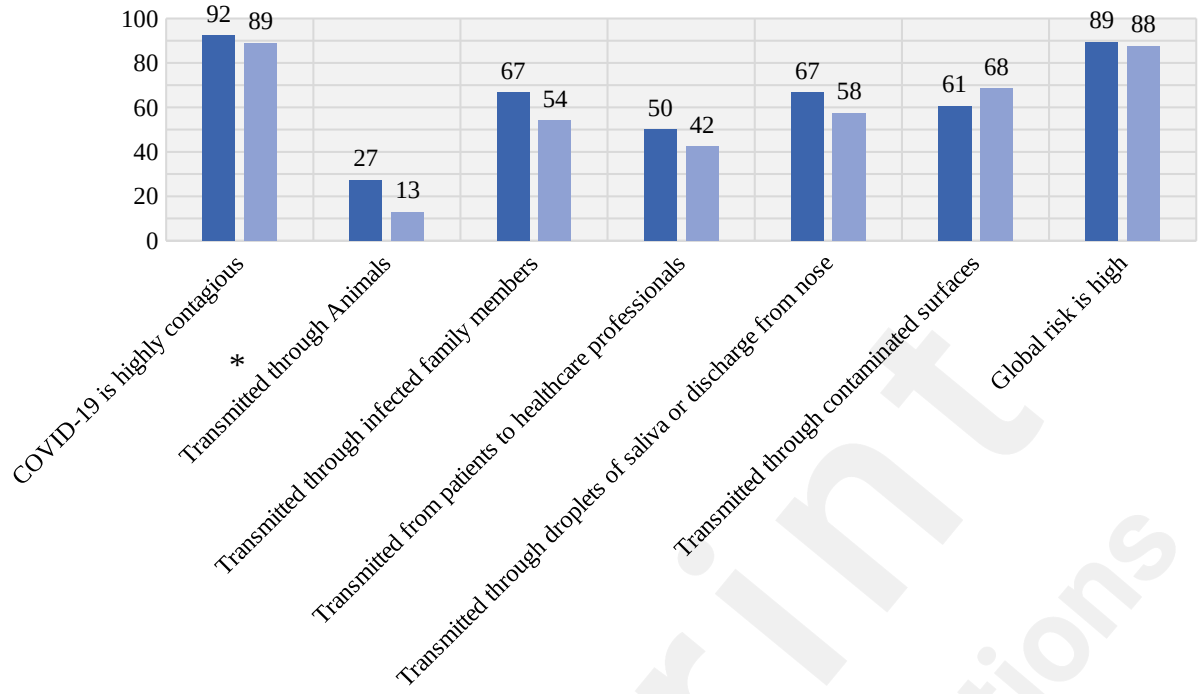
is highly contagious. When comparing both sub-groups, it was found that the majority in both groups correctly mentioned that it is highly contagious. Where, 92.4% in HS group, and 89.0% in non-HS group, answered yes. The difference between both groups was found to be statistically not significant (p=0.445), hence the hypothesis was rejected and the null hypothesis was accepted (Figure 3).

4.4.2 Transmission Routes/ modes

The majority of all the participants thought that contaminated surfaces (66.9%), droplets of saliva or discharge from the nose (60.3%), infected family members (66.0%) and patients (51.8%) are the main transmission modes for COVID-19. Upon comparing the knowledge of participants in both groups, it was found that both groups correctly identified almost all the transmission modes with no statistically significant (P>0.05) difference between their responses (Figure 3). Therefore, the null hypothesis was accepted. Only for the animal transmission route; the HS participants had statistically significant (p=0.011) higher knowledge (27.3%) in comparison to the non-HS participants (13.0%). Hence, the hypothesis was accepted.

4.4.3 Global risk assessment of COVID-19

Eighty-eight percent (88.2%) of participants (N=187/212) correctly identified that the global risk assessment declared by the World Health Organization (WHO) for COVID-19 is “very high” (89.4% HS and 87.7% non-HS). Therefore, the difference was not found to be statistically insignificant (p=0.719) and the null hypothesis was accepted (Figure 3).



* Statistically significant difference between HS and non-HS.

Figure 3: General knowledge about transmission of COVID-19

4.5 General knowledge about the protection methods against COVID-19

4.5.1 Protection methods

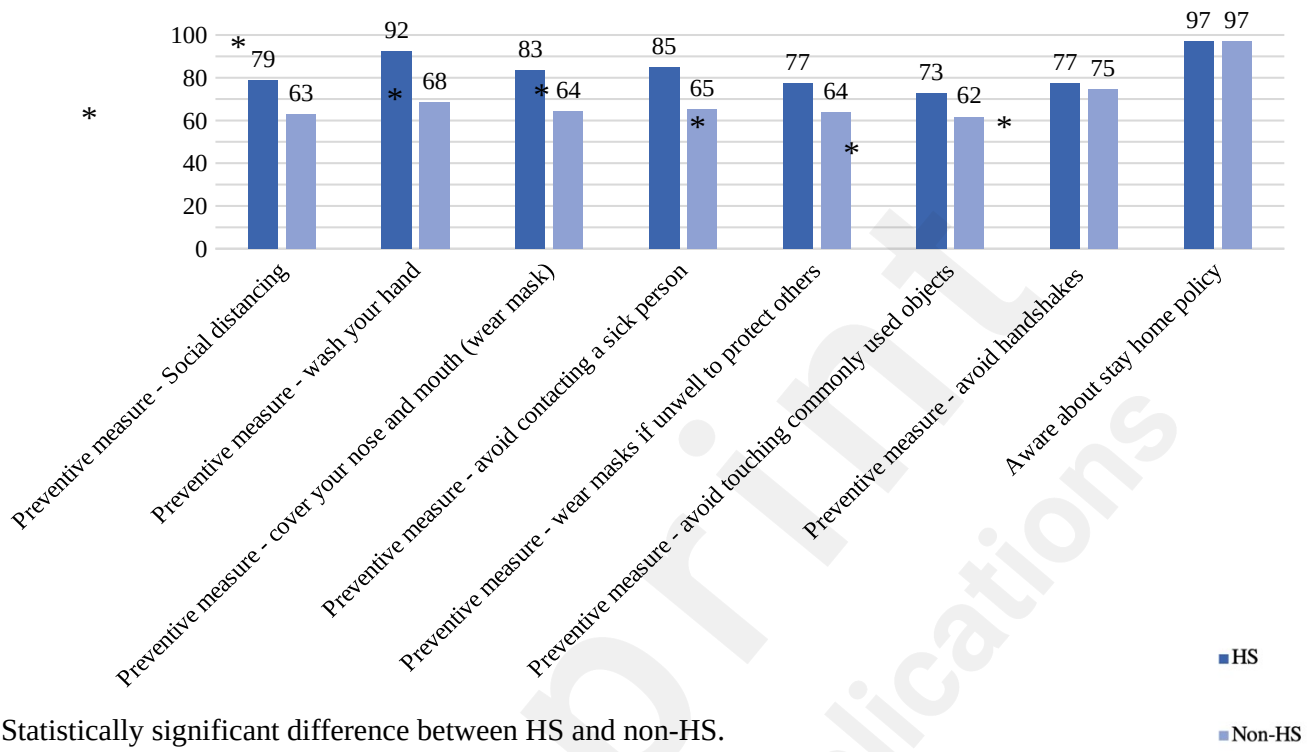
The overall knowledge of participants towards the protection methods was generally high. Seventy-seven percent (77.88%) had correctly identified the protective and precautionary measures recommended by the WHO. Regardless of the participants background; about 88% agreed on washing hands thoroughly with soap and water, 80.66% identified the importance of avoiding contact with anyone who's sick and covering nose/mouth when coughing or sneezing. Furthermore, 75.0% believed that they should were masks for protection. Social distancing, avoiding handshakes and hugs as well as avoid touching the face were also recognized by most of the participants 72.64%, 75.47% and 71.69%, respectively. Only 5.66% were not sure about the protective measures (Figure 3).

The analysis of sub-groups results showed that there is a statistically significant ($P<0.05$) higher knowledge and awareness amongst HS participants regarding the protection methods (washing hands, social distancing, covering nose/moth while sneezing/coughing, avoid touching eyes, nose and mouth, avoid contact with anyone who sick and wearing masks if unwell to protect others). Therefore, the hypothesis was accepted. On the other hand, the difference between the sub-groups was not found statistically significant ($P>0.05$) regarding their awareness about avoiding touching commonly used objects (72.7% in HS and 61.6% in non-

HS) and avoid handshakes and hugs (77.3% in HS and 74.7% in non-HS). Consequently, for these two protective techniques, the null hypothesis was accepted (Figure 3).

4.5.2 Stay home policy

The results showed a very high awareness level (97.16%) concerning the 'stay home' policy to minimize public gathering as a protective measure against COVID-19, with no statistically significant difference between groups (p=0.906). Hence, the null hypothesis was accepted (Figure 3).



* Statistically significant difference between HS and non-HS.

Figure 4: General knowledge about the protection methods against COVID-19

4.6 Knowledge about the treatment, recovery and prognosis of COVID-19

4.6.1 COVID-19 recovery rates

Most of the participants (87.73%), believed that many people who have been infected or diagnosed with COVID-19 have recovered or are recovering. When comparing HS and non-HS participants, the difference was not found to be statistically significant (p=0.344). Therefore, the null hypothesis was accepted.

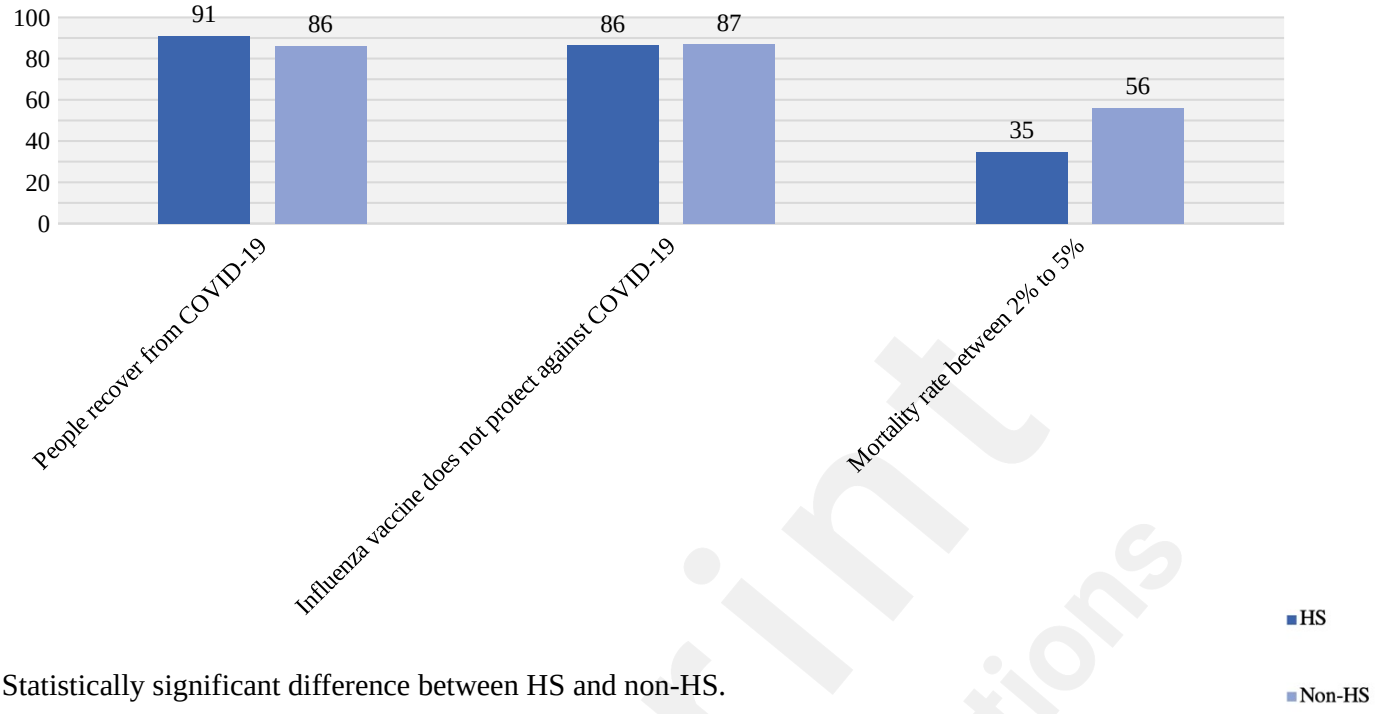
4.6.2 COVID-19 mortality rates

Although the knowledge of participants about the mortality rates was very high, only about one third of the participants (38.6% N= 82/212), had identified that the mortality rate of COVID-19 is 2-5%, as shown in Figure 3. The non-HS participants were more aware of mortality rate (34.8% in HS group and 40.4% in non-HS group), and the difference was not found to be statistically significant. Accordingly, the null hypothesis was accepted.

4.6.3 Does the influenza vaccine protect against COVID-19?

The vast majority in both groups (86.7%, N=184/212) were aware that the influenza vaccine does not protect against COVID-19. Yet, the difference in knowledge between participants within both sub-groups was not

statistically significant (13.6% in HS and 13% in non-HS). Hence, the null hypothesis was accepted.



* Statistically significant difference between HS and non-HS.

Figure 5: Knowledge about the treatment, recovery and prognosis of COVID-19

4. Discussion

To the best of our knowledge, this is the first study conducted in the United Arab Emirates to test the knowledge and awareness of a College population on COVID-19. The Health Belief Model was used to gauge this study that it is unlikely that people would aim to address a problem they are not entirely aware of, feel threatened by or feel that they are susceptible to acquire it [8, 9, 11–13].

Social media platforms were the most popular sources for obtaining information about COVID-19. In fact, social media was flooded with information about COVID-19 [15, 16], which made it the most convenient source of information. As per Ahmed and Murad et al. (2020), Facebook was the most used social media network in Iraqi Kurdistan [17]. This is not different from the findings of Ibrahim et al. (2018), where Facebook was the most popular source of information about Zika virus. Although social media provides an opportunity to directly communicate health information to the public, the danger of disseminating inaccurate information remains to be high [19]. Hence, governments should develop strategies to mitigate these concerns, and health authorities need a more proactive and agile public health presence on social media to combat the dissemination of inaccurate information.

Results of this study reveal that the HS participants had more accurate knowledge regarding the causative pathogen in comparison to the non-HS participants, and this difference was statistically significant. This is

similar to the study that was conducted by Khasawneh et al. (2020), where when medical students were surveyed, their knowledge was at the expected level [20]. In the same vein, a study that was conducted about Zika virus confirmed that being part of the health sciences is associated with having higher knowledge about Zika [21]. However, this was not the case when our participants were asked about the incubation period, symptoms, the difference between the causative agent of COVID-19 and MERS-CoV or SARS and susceptibility of elderlies. Where in both groups, their knowledge and awareness was high. Findings of general public knowledge in two studies was relatively high about COVID-19 symptoms, and susceptibility of elderlies [22, 23]. In addition, knowledge and awareness of participants about the disease contagiousness, transmission methods, infection sources, treatment, recovery and fatality rates, and the protection methods was generally high amongst all participants in both groups. Similar findings were seen in Kebede et al. (2020), regarding the knowledge of participants towards the aforementioned parameters [23]. With regards to the transmission routes, both sub-groups have correctly identified most of the transmission modes with no statistically significant difference between them. The same pattern was seen in Geldsetzer (2020) and Kebede et al. (2020), with regards to the possibility of transmission through infected people. The high level of knowledge and awareness could be attributed to the fast dissemination of information through social media platforms rendered people more aware about COVID-19. In addition, because COVID-19 impacted every single person directly, people were more aware of it. It was noticed that knowledge of participants regarding the susceptibility of elderlies was high, which although it helped to heighten safeguarding this population, it diverted the attention of the remaining of the population (adults and young) to adopt preventive measures.

Participants in Olapegba et al. (2020), thought that droplets and touching contaminated surfaces might transmit the virus [24]. The same was seen in this study, but participants also identified the healthcare professionals and family members as potential sources for transmitting the virus. Participants of this study were very well aware (97%) of the social distancing policy (stay at home policy). In fact, the lockdown, with closure of almost all public areas and amenities except for supermarkets, pharmacies and hospitals, as well as working from home and distance learning; all enforced the physical distancing and stay home policy. The same was seen in Geldsetzer (2020); Kebede et al. (2020), were the majority of participants thought that crowded places should be avoided [22, 23].

Although the vast majority of participants did not identify animals as potential route for transmission, there was a significant higher knowledge amongst HS participants in comparison to the non-HS participants. Yet, in Kebede et al. (2020), half of the participants thought that infected animals might transmit the disease. This misconception is considered normal as the animal model studies are currently lacking for SARS-CoV-2, and so far there is no sufficient evidence that animals play a significant role in spreading of COVID-19 [25].

Participants irrespective of their background showed a high level of knowledge and awareness regarding the protective measures used against COVID-19, and there was no statistically significant difference in the knowledge of both groups as seen in the results section. The same was seen in Geldsetzer (2020); Kebede et al., (2020) and Olapedgba et al. 2002 [24], as participants were very well aware of the most common protective techniques. This could be a reflection of the pandemic nature of the virus, in contrast to other endemics [21, 26], where in the case of COVID-19, precautionary measures were made more available to public via different platforms, further to global regulations that affected everyone. Despite the aforementioned discussion, the HS participants had higher knowledge and awareness regarding all the protective measures specified in the results section except for avoiding handshake and touching common surface.

The study showed a high awareness level regarding the recovery rates of COVID-19 patients, with no statistically difference between HS and non-HS participants. This could be explained by the daily updates that are made available in the social media, the internet and news by the Ministry of Health and Prevention (MoHP), WHO and other health organisations. Similar findings were reported by Geldsetzer (2020) [22]. However, for the mortality rates, lower percentages identified the correct rate, with no significant difference between groups. This could be attributed to the different disease progression patterns in different countries and the evolving nature of information about COVID-19. The majority of the participants in both groups were aware that other vaccines like the influenza vaccine do not provide protection against COVID-19, where everyone was aware that the treatment and vaccines are still not available from governments' reports and news, and the same finding was reported by Geldsetzer, (2020) [22].

In general, the high level of knowledge and awareness demonstrated by most of the participants regarding COVID-19, can be highly attributed to the dissemination of information through social media as elucidated earlier. In addition, it could be highly linked to its pandemic nature, where all concerned global health organisations and governments launched programs to elucidate people's about safety measures and consequently minimize transmission [27]. In UAE, MoHP have conducted a series of virtual campaigns through their website or social media to enlighten public about the preventive actions, in an attempt to control and minimize the spread of COVID-19. Furthermore, MoHP and other health authorities hosted virtual conferences and workshops targeting COVID-19 to raise public awareness. Also, updates regarding COVID-19 was a standing item in the news on daily basis to raise public awareness. Similarly, within the community of our study, the college implemented two practices which are distance learning and working from home. It shared COVID-19 protection guidelines with all students and staff. This consequently have resulted in heightening their knowledge and awareness.

5. Conclusion

Our findings brought to light the high level of knowledge and awareness amongst the participants of the study

regarding COVID-19 nature, transmission modes, protective and preventive measures for infectious diseases in general, recovery percentages and treatment options. Given the fact that this pandemic affected everyone directly, it was expected to see a high level of knowledge and awareness. As per the results, there were some areas where knowledge of HS group was higher than the non-HS group and other areas the knowledge was found to be low for both groups, and these will need to be addressed specifically through awareness campaigns. This assessment is important because when people are well informed about a condition, the disease transmission might be reduced as per the HBM. The study can serve as a reference point for future awareness and education and public awareness programs, whether it was for COVID-19 or any other condition.

Conflict of interest

None declared.

Funding

No funding sources.

Competing interests

None declared.

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