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Assessment of educated people awareness level and sources about COVID-19

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Abstract

Background:
Measurement of educated people knowledge about COVID-19 is important to enhance health measures to reduce the rate of infection. Also, knowing the most usable source of data for the public is important point for enhancing the public awareness about the disease. Hence, this study aimed to evaluate the awareness and the practices related to COVID-19 among educated people.

Methods:
360 participant received a questionnaire that was divided into several parts aimed at collecting data about participant awareness regarding COVID-19. Data collected using a designed questionnaire; to evaluate the knowledge related to COVID-19. The questionnaire was classified into 6 parts covering all aspects of COVID-19 awareness data. The first part was to evaluate the respondent's general knowledge [6 items]; the second was to evaluate symptoms knowledge [1 item]; the third was to evaluate transmission knowledge [2 items]; the fourth was to evaluate preventive knowledge [4 items]; the fifth was to evaluate treatment knowledge [2 items] and the sixth was indicted the main source of gathering information about the disease [1 item].

Results:
A total of 360 participants participated, 91% of them know the main clinical symptoms of COVID-19. 86% believed that following preventive measures (the etiquette of sneezing, coughing, personal hygiene or wearing a mask) reduce infection transmission. More than 90 % of participants used the social media for gathering information about the disease, while highly educated (Master and PhD holders) used the published articles as a source for their knowledge, however they represent a few percent of the participant.

Conclusion:

Overall, the study participants had good knowledge about COVID-19, however, more efforts are needed to maximize the awareness of the public. Further clinical study is required to evaluate the effect of such good knowledge on decreasing the infection rate.

Keywords: COVID-19; highly educated public awareness; Egypt

Introduction

Respiratory viral diseases which started and spread during the current century were a result of coronaviruses infections. [1, 2] one of the theses attacks affected all over the world and lead to more than million death, COVID-19 is viral respiratory infection, which is pandemic all over the world [3, 4]. The spread of COVID-19 infections depend on the transmission of droplets between people, hence the direct contact with confirmed cases is the big source for catching the infection [5-7]. The diseases does not affect all ages with the same strength, elderly are more affected and high percent of them become hospitalized and need mechanical ventilation [8, 9]. At the start of the pandemic, the symptoms of the disease were mainly related to the respiratory system such as cough, fever and breathing difficulties, which could progress to result in acute respiratory failure syndrome or multi organ failure, and death [6, 10]. Now more non-respiratory symptoms were recorded such as gastro-intestinal related symptoms (diarrhea and vomiting) which were confirmed by presence of the viral genetic material in stool samples.[11, 12] Loss of ability to smell or taste your food could be

related to COVID-19 infection.[13, 14]
According to the nature of COVID-19 spread, improving the public awareness about the importance of social distancing and self-protective tools is the essential element in limiting the spread of the infectious diseases [15, 16]. Proper education to the public could be helpful in reducing the rate of infection also in early diagnosis and treatment of the disease [17, 18]. Limiting the spread of the infection has a lot of benefits not only by decreasing the number of cases or death but also it has financial aspects. The higher the spread rate, the lower the possibility of good medical care because of the possible medical shortage that will result of receiving large number of subjects that excessed the hospital capacities.[19, 20]
To reduce the spreading of the infection, governments' Ministry of Health develops awareness and educational messages to educate the public about this virus. [21].
This study aimed to evaluate the awareness and the practices related to COVID-19 among highly educated people and the most suitable way for increasing the public awareness.

Methods

A study was conducted for the period on highly educated people to assess their knowledge and awareness about COVID-19. all subjects participated in the study received a questionnaire which were divided into seven sections. The first section was oriented to collect demographic data form subjects (gender, age in year, marital status, current place of residence (city or country), and educational level). The second section was oriented to collect data about general knowledge of the participants regarding COVID-19 (source of infection, incubation period, the presence of vaccine, effect of temperature on virus, and the most susceptible people to be affected by the disease). The third section was designed to evaluate the knowledge about COVID-19 symptoms. The fourth section was about the route of disease transmission and the precautions that should be used to prevent or decease the virus transmission after sneezing. Fifth section was to evaluate the public awareness about the preventive measurements that should be followed by the people. Sixth section was related to the knowledge of the participants about the general treatment of COVID-19. The last section was about the education methods that the participants depend on during the last months of COVID-19 pandemic.
The average time needed to complete the questionnaire was 4 minutes. The questionnaire components were designed based on the educational instructions published by the World health organization (WHO) [22].
Assessment of total knowledge: for the 2nd, 3rd, 4th, 5th, and 6th sections, the respondent was given a score =1 for correct answer and zero score for incorrect answer to end up with a total score ranging from 0-35.

Results

Subjects' demographic data (Table 1):

A total of 360 (223 females) subjects participated; most of them were in the age group of 17 to 30 years (65%). 49% were undergraduates and 56% were living in cities. Table 1 shows the percentages of subjects' demographic data.

Table 1- Subjects demographic data

characteristic	percentage	No.
Gender		
Male	38%	**137**
female	62%	**223**
Age in years		
under 17 years	1%	**2**
17 -30 years	65%	**235**
30 – 40 years	31%	**110**
>40 years	4 %	**13**
educational level		
Undergraduate	49%	**178**
Postgraduate	42%	**152**
Master/Ph. D.	8%	**30**
marital status		
Unmarried	58%	**208**
Married	43%	**143**

current place of residence		
city	56%	**159**
country	44%	**201**

General knowledge about COVID-19 and the practices to overcome it (Table 2):
The majority of the participants (95%) answered that they have knowledge about COVID-19. Of all participants, 93% know that the incubation period for COVID-19 is about two weeks; 61% believed that the high temperature in summer might kill the virus and 24% answered that the high temperature in summer do not kill the virus. Of all participants, 65% believed that there is no vaccine for COVID-19 but 28% answered that there is a vaccine for COVID-19; 67% believed that bats are a source for COVID-19 and 21% answered that bats are not a source for COVID-19. Regarding the most susceptible and affected groups to infection with the corona virus, the majority of the participants (317) responded that the most susceptible groups are people of all ages who suffer from chronic medical diseases, while (344) indicated that elderly are the most susceptible to infection, and only (97) considered that children are among the most susceptible to infection with SARS-COV-2, and finally (275) indicated that pregnant women are highly susceptible to the infection.

Table 2- General knowledge about COVID-19 and the practices to overcome it**:**

question	No.	%
1- Are you have knowledge about coronavirus?		
• yes	342	95%
• no	18	5%
2- What is the incubation period for Corona virus?		
• Two days	5	1%
• One week	20	6%
• Two weeks	335	93%
3- Is there a vaccine for corona virus?		
• yes	101	28%
• no	234	65%
• I don't know	25	7%
4- Are bats a source of corona virus?		
• yes	242	67%
• no	75	21%
• I don't know	43	12%
5- People most susceptible to infection with coronavirus		
• People of all ages who suffer from chronic medical diseases	317	
• children	97	
• Elderly	344	
• Pregnant women	275	
• I don't know	5	
6- The high temperature in summer may kill the virus.		
• yes	218	61%
• no	87	24%
• I don't know	55	15%

Knowledge about the disease symptoms (Table 3):
Most of participants had good level of knowledge about the symptoms of COVID-19. Most of them (345) know that difficulty of breathing is a symptom for COVID-19, the other symptoms known by them were fever (328), sore throat (326), loss of smell and taste (280), diarrhea (227), runny nose (87), and vomiting (67).

Table 3- Knowledge of disease symptoms:

question	No.
1- The symptoms of Coronaviruses	
• Sore throat	326
• Fever	328
• Diarrhea	227
• difficulty breathing	345
• loss of smell and taste	280
• runny nose	87
• vomiting	67
• I don't know	1

Knowledge about methods of transmission of the disease (Table 4):
Most of the participants (358) know that the disease is transmitted through droplets produced when infected persons cough or sneeze, while (345) believed that the infection with COVID-19 is transmitted through direct contact with contaminated surfaces and then touching eye or mouth. In addition, (149) believed that the infection could be transmitted by eating uncooked meat, (96) believed that the infection transmitted from cats and camels to humans. (63) considered that the infection transmits by insects such as mosquitoes.
Regarding the way by which the participants manage cough or sneezing, 303 participants answered that they use the elbow attachment by arm, (348) use tissue paper to sneeze and cough and get rid of it quickly, (325) answered that they wash hands with warm water and soap after coughing or sneezing, (91) use the hand to cover the mouth, and (8) answered that they don't cover their mouth.

Table 4- Knowledge of methods of transmission of the disease:

question	**No.**
1- How people become infected with Corona virus	**358**
• Through droplets produced during coughing or sneezing of infected persons.	345
• Through direct contact with contaminated surfaces and then touching eye or mouth.	63
• By insects such as mosquitoes	96
• From cats and camels to humans	149
• By eating uncooked meat	2
• I don't know	
2- Managing cough and sneezing to reduce infection	303
	348
• Use the elbow attachment by arm	325
• Use tissue paper to sneeze and cough and get rid of it quickly	91
• Hand washing with warm water and soap	8
• Use the hand to cover the mouth	
• I don't cover my mouth	

Knowledge about the prevention considerations of COVID-19 (Table 5):
Most of participants had good knowledge about prevention considerations that can reduce the disease spread. Most of the participants (344) know that people suffering from Cold, flu, or cough symptoms could be infected with the corona virus and they avoid direct contact with them , (332) answered that they avoid contact with eyes, nose, and mouth before washing their hands and (184) answered that they avoid exposure to animals during travel. 94% believed that children and young adults must take all considerations to prevent infection with COVID-19 although, they are less suspected to be infected. In contrast, 29 of participants believed that medical mask isn't required during travel, (81) revealed that, it is not necessary to wash hands while traveling Regarding the major steps taken by participants to prevent spread of the disease, most of them (344) believed that personal hygiene and washing hands with water and soap are of the major steps to prevent COVID-19, (327) agreed that following the etiquette of coughing and sneezing is one of the steps also, (304) considered that wearing a medical mask in public places is also one of the steps, (309) agreed to avoid close contact with someone who has cold or flu symptoms, and (185)

answered that avoiding unsafe handling of animals is of the steps to prevent COVID-19, In addition, 92% of them agreed that quarantining people infected with the COVID-19 is an effective way to prevent the spread of the virus, while 7% did not agree.. In contrast, (22) believed that taking antibiotics is of the steps to prevent COVID-19.

Table 5- Knowledge of preventive considerations of COVID-19:

question	%	No.
1- Recommendations for travelers during travel		**344**
• Avoid approaching people who have cold, flu or cough symptoms		**29**
• No medical mask is required		**81**
• It is not necessary to wash hands while traveling		**332**
• Avoid contact with eyes, nose, and mouth before washing hands		**184**
• Avoid exposure to animals		
2- It is not necessary for children and young adults to take any measures to prevent infection with the COVID-19 because they are less likely to be infected		
• yes	5%	**17**
• no	94%	**340**
• I don't know	1%	**3**
3- Major steps to prevent COVID-19.		
• Personal hygiene and washing hands with water and soap		344
• Following the etiquette of coughing and sneezing		327
• Taking antibiotics		22
• Wearing a medical mask in public places		304
• Avoid close contact with someone who has cold or flu symptoms		309
• Avoid unsafe handling of animals		185
4- Quarantining people infected with the COVID-19 is an effective way to prevent the spread of the virus		
• yes	92%	**330**
• no	7%	**25**
• I don't know	1%	**5**

Knowledge about the treatment and practices of the infected patient (Table 6):
The fact that antibiotics have no role in COVID-19 infection treatment was known by large percent of the participants (82%). In contrast, 6% of them believed that antibiotics are effective in preventing the infection and about 4% of them believed that antibiotics are effective in treating the infection. Regarding the action taken in case of presence of COVID-19 like symptoms, 187 participants indicated that they will call 105 (the hotline for COVID-19 in Egypt), (228) answered that they will go to the nearest emergency hospital and (236) revealed that they will stay at home in a complete isolation.

Also. A few percent (23 participants) of them revealed that they will take medications like antibiotic or chloroquine when they feel symptoms of the COVID-19, while (8) answered that they will not take any action or take to any one, while (84 participants) indicated that they will take medicinal herbs to strengthen their immune system.

Table 6- Knowledge about treatment and practices of the infected patient:

question	%	NO.
1-Antibiotics		
• Effective in preventing infection with corona virus	6%	21
• Effective for treating corona virus infection	4%	15
• It has no role in corona virus infection	82%	307
• I don't know	8%	31
2- What will you do when you feel symptoms of the Corona virus?		
• Not telling anyone		8
• taking any antibiotics or take medicines like chloroquine		23
• Buy and eat medicinal herbs to strengthen the immune system		84
• you will go to the nearest emergency		228
• you will stay at home with complete isolation		236
• you will call 105 (the hotline for Coronavirus in Egypt)		187

Determining the most effective method for enhancing the public awareness about the disease (Figure 1): Social media became the main source of gathering data about COVID-19 according to the response of the participants, followed by TV reports. Participants that depend on scientific publication and WHO reports are a few percent compared to all participants and most of them are master and PhD holders. In addition, other sources for gathering knowledge about the current pandemic were from the direct communication especially with healthcare professionals.

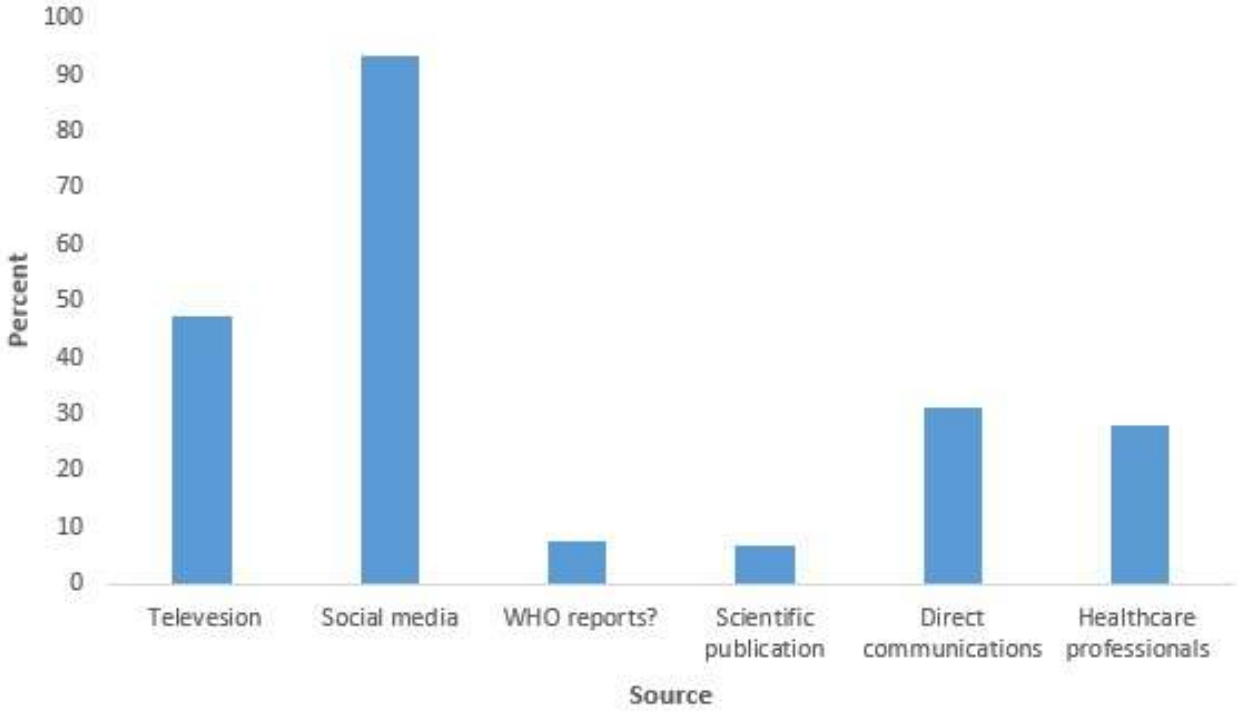

Figure 1- effective method for enhancing the public awareness about the disease

Total knowledge:
The mean ± SD score of this survey was 27.45 ± 1.2 regarding the knowledge about the disease between the educated people. This indicates that the respondents had good knowledge about the disease and the practices to deal with it. The mean score for females was 27.67 and 27.23 for males.

Discussion
The study questionnaire was designed according to the educational messages published on the website of the WHO and the Egyptian Ministry of Health [23]. The findings reflected the good level of awareness between educated people, however some issues about COVID-19 still need to be clearer for the public like the misuse of antibiotic for prevention of the disease. The knowledge regarding signs and symptoms of the disease is an essential

element that control the process of disease spread through earl isolation of suspected cases and early management. The participants have a good knowledge about the signs and symptoms of the disease also the newly reported symptoms such as gastrointestinal symptoms.
The distribution of the demographic data of the participants showed a high percentage of females, colleague students, unmarried and city dwellers. However, there was no significant difference regarding the total score of both genders.
Knowing the causes is considered the first step in public education [24-26]. It was shown in previous studies that when people understand how the disease is transmitted, what are the disease symptoms and what the preventive methods for spreading the COVID-19 decrease [27-29].
Most of the respondents have a good knowledge about COVID-19, but about one-quarter of the participants believed that children are most susceptible to be infected with COVID-19, which indicates that they need more awareness about the disease, however, this point could has a positive impact through following the correct instructions for preventing COVID-19 spread by children. [30]
More of the respondents had a good knowledge about the disease, its symptoms and its treatment. However, a previous study in Saudi Arabia found that the information level about COVID-19 among the public was low and the information level was the significant predictor of both the level of concern and precaution [27]. In another research in Al Qassim Area [31], 44% of the respondents had low knowledge about the source of COVID-19. That might be because the epidemic although in Saudi Arabia in 2013 was limited to a certain area not pandemic like the one we are discussing here. Most of the participant here have a good knowledge about the transmission methods of COVID-19. More than 100 participant depended on the direct communication especially with health care professionals for gathering information about the COVID-19, hence educated people and the healthcare workers should be informed and educated about the new researches and information about COVID-19 to transfer this information to the public in order to reduce the spread of infection spread. Highly educated people (Master and PhD) depend on scientific publications to enhance their knowledge about the disease, however they represent a low percent among the participant.
A lot of the participants answered that when they feel with COVID-19 symptoms, they will call 105 (the hotline for COVID-19 in Egypt). While most of the respondents answered that, they will stay at home with complete isolation or go to the nearest emergency. That indicates the great awareness between the educated people about the correct action that should be followed.
A lot of the participants indicated that, they will not take any antibiotics or take medicines like chloroquine without asking a doctor, as 82% of the participants known that antibiotics has no role in COVID-19 infection, which indicates the high awareness of the participants; the same result in the treatment part was reported in the electronically conducted national survey [32]. The low percent that decided to use antibiotic as a prophylactic medicine could lead to antibiotic misuse, hence, more instructions should be provided by the community pharmacist about the indication for using antibiotic for managing COVID-19.
Future information and education messages for enhancing the awareness of the highly educated people should be announced through the main sources for obtaining these data such as social media site, as indicated by the findings of the study most of educated people depend on the social media sites for gathering information about the disease. Also, enhancing the knowledge of educated peoples could result in enhancing the public awareness of the disease through their direct communications with the public. We reported that higher educated people have the ability to gain knowledge about the disease from different sources, which cannot be easily gained by low educated ones. [32].
There was near unanimous approval between the participants on the importance for young adults and children to take all measures to prevent infection with COVID-19 although; they are less likely to be infected. They also agreed on quarantining people infected with the COVID-19 is an effective way to prevent the spread of the virus. That indicates the highly carefulness of the participants from the disease.

Conclusion:

The educated participant had a good knowledge about COVID-19. With recent spreading of this pandemic disease in the world, it is important for the Ministry of Information to enhance the knowledge and awareness of COVID-19. Continuous training is needed by the Ministry of Health to the healthcare workers to support their important role in spreading awareness about COVID-19 infection to the public. Providing the awareness data through the social media could enhance the data delivery to young educated youth. More efforts are needed to enhance the knowledge of the public about the correct use of medications, particularly antibiotics.

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