COVID-19 awareness among a group of Egyptians and their perception toward the role of dentists in its prevention: a pilot cross-sectional survey

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Abstract

Aim The main purpose of the study is to assess the awareness of a group of Egyptians about COVID-19 infection and their perception of the role of dentists in its prevention.

Subjects and methods An observational cross-sectional survey included 74 participants who attended Minia University Dental Hospital, Minia City, Egypt, from 10 March to 2 April 2020. A face-to-face interview using an anonymous questionnaire was carried out in this study. The questionnaire contained 20 questions divided into three parts; the first part included the participants' baseline characteristics. The second part analyzed the participants' awareness of COVID-19 infection through ten questions. Finally, four questions outlined participants' perception of the role of dentists in preventing the spread of COVID-19.

Results Overall participant awareness was adequate at 55.4%. The percentages of “good” and “poor” overall awareness scores were 40.5% and 4.1%, respectively. Most respondents' perception of dentists' role in COVID-19 prevention was poor. All baseline characteristics showed no statistically significant difference related to the participants' awareness about COVID-19 infection and its spread ($p > 0.05$).

Conclusion From the findings of the present pilot study, it can be concluded that the general population's awareness of COVID-19 infection and its route of transmission was adequate. Participants' understanding of the role of dentists in COVID-19 prevention was poor.

Keywords COVID-19 · Egypt · Infection · Dentists

Introduction

Coronavirus disease 2019 (COVID-19) is a newly emerged, highly contagious disease. It was first discovered in Wuhan City, the capital of Hubei Province, in China. The ongoing pandemic nature of the COVID-19 outbreak is ascribed to its

fast spread (Kassema 2020). COVID-19 belongs to a family of viruses that causes a group of manifestations ranging from the signs and symptoms of the common cold to Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). COVID-19 symptoms vary from mild in most cases to advanced serious complications. Common symptoms include fever, cough, loss of smell and dyspnea. Symptoms may be aggravated and advance to pneumonia, multiorgan failure and death (Hopkins and Kumar 2020; Sabino-Silva et al. 2020; Tavakoli et al. 2020). The aggressive spread of COVID-19 over > 200 countries and regions caused approximately 48,200 deaths by 2 April 2020 (COVID).

In Egypt, authorities of the Ministry of Health and Population announced 779 confirmed cases by 1 April 2020 with 52 deaths and 179 recovered cases. Minya Governorate in Upper Egypt recorded 34 confirmed cases of COVID-19 and one death by 1 April 2020.

COVID-19 transmission is mainly via droplets released by coughing, sneezing, talking or expiration. Droplets from

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uncovered coughing can travel 4.5 m in a study conducted in Singapore (Bourouiba 2020; Loh et al. 2020). Salivary droplets can be a source of viral infection (Sabino-Silva et al. 2020). Touching surfaces contaminated with infected droplets can also be a source as the virus can survive for different amounts of time depending on the surface (stainless steel, plastic or cardboard), temperature and humidity (Andersen et al. 2020; Kampf et al. 2020).

Social distancing and adopting personal hygiene measures are important to avoid infection. Using a disinfectant, such as household soap, 60–71% ethanol, 0.1% sodium hypochlorite, 0.5% hydrogen peroxide or 0.2–7.5% povidone-iodine, effectively kills the virus (Kampf et al. 2020; Mohajan *nd*; Wu et al. 2020). One of the WHO's strategies to control overwhelming infection spread is breaking the infection cycle, e.g., minimizing human-to-human transmission by reducing secondary infections among close contacts and health care workers such as dentists (Organization 2020a, b). Dental procedures are a high-risk source of infection because of direct exposure to aerosols during treatment (Sabino-Silva et al. 2020).

In this critical stage, public awareness of the disease nature and its route of transmission is the cornerstone of diminishing infection spread. The current pilot study aimed to assess the awareness of a group of Egyptians about COVID-19 infection and their perception of the role of dentists in its prevention.

Subjects and methods

Design, setting and population

Of 82 subjects, 74 agreed to participate in the current observational cross-sectional survey. The study was conducted in Minia University Dental Hospital, Minia City, Egypt, from 10 March to 2 April 2020.

Inclusion/exclusion criteria

The only exclusion criteria were the presence of obvious emotional and/or behavioral problems and refusing to participate in the study.

Questionnaire design and data collection

A face-to-face interview using an anonymous questionnaire was adopted in this study. The questionnaire contained 20 questions that were divided into three parts; the first part included five questions covering the following: (1) personal data (gender and age); (2) socioeconomic data in which the following variables were addressed: (a) education level categorized into four subclasses: greater than secondary, secondary school, less than secondary school and illiterate (Eid et al. 2020); (b) daily income with a cutoff point of US\$3.20 per

day (Eid et al. 2020). Income was divided into three categories: low, < 1500 LE (Egyptian pounds); middle, 1500–4500 LE; high, > 4500 LE; (c) material status with two responses: currently married or currently unmarried. (3) One question was about the participants' health condition and had two possible responses, yes or no. If the answer was “yes,” the participant was asked about the nature of his/her health status.

The second part of the questionnaire analyzed the participants' awareness of COVID-19 infection through ten questions. Questions were extracted mainly on the basis of pre-tested questionnaires described in the literature to assess public awareness about three infectious diseases (Cheung et al. 2005; Liu et al. 2013; Lu et al. 2009; Yadav et al. 2011). Questions discussed the participants' knowledge of the viral route of transmission and the required precautions and measures to follow to avoid the spread of infection. Each question had three responses: yes, no or I'm not sure. For each question, the correct response was scored “1” and an incorrect response was scored “0.” The scores were summed (the maximum score for each individual was 10, and the minimum was 0) (Khattab et al. 2019). Awareness scores were classified into “good” for correct 8-point responses, “moderate” for correct 6- or 7-point responses and “poor” for < 6 correct responses. The overall awareness was assessed as follows: “good” for scores between 80%–100%, “adequate” for scores of 50%–79% and “inadequate” for scores < 50%.

The third part consisted of four questions with three responses as mentioned previously in the second part of the questionnaire. Questions outlined participants' perception of the role of dentists in prevention of COVID-19 spread. The participants' answers were divided into two categories: “adequate” for at least three questions with “yes” responses and “inadequate” for less than three questions with “no” or “I am not sure” responses. The maximum total score of participants' perception was 296, and the minimum score was 0. An overall score ≥ 222 (75%) was considered “good” and from 148 (50%) to 221 “adequate,” while overall scores < 148 were considered “inadequate.”

Data analysis

Statistical Package for the Social Sciences (SPSS) version 20 was used for tabulation of descriptive data including baseline characteristics and questionnaire domains (i.e., participants' answers to the questionnaire on awareness about COVID-19 infection and their perception of dentists' role in its prevention). Mean $\pm$ standard deviation and median and interquartile range (IQR) of the study domain scores were calculated in relation to the baseline characteristics. Mann-Whitney U and Kruskal-Wallis H tests were used to compare differences between two or more independent non-parametric data. Spearman's correlation coefficient (r) was used to determine the strength of the association between baseline characteristics

and participants' total COVID-19 awareness score and their perception of the role of dentists in its prevention. Significance (p) was defined at < 0.05 .

Results

Internal consistency (Cronbach's alpha), which addressed the reliability of the questionnaire data, was 0.81.

The most prevalent age group (37.8%) was between 20 and 29 years old. The percentages of males and females were 55.4% and 44.6%, respectively. Almost half of the participants' level of education was secondary school (47.3%), while the percentage of illiterate participants and less than secondary school was 36.5%. Approximately half of respondents were of low average income (51.4%), while those with intermediate and high income comprised 35.1% and 13.5%, respectively. Slightly more than two-thirds of the participants were married (Table 1).

The percentage of the adequate overall participant awareness score was 55.4% ($n = 41$), while the percentages of "good" and "poor" overall awareness scores were 40.5% ($n = 30$) and 4.1% ($n = 3$). Most (75.7%) of the respondents' perception toward dentists' role in COVID-19 prevention was inadequate ($n = 56$). Only 6 respondents recorded good

perception (8.1%), and 12 showed adequate perception (16.2%) (Fig. 1).

The average score for questions concerning participants' awareness about COVID-19 infection ranged from 1.03 ± 0.16 to 2.43 ± 0.91 . The mean score for the question related to the perception of dentists' role in the prevention of the spread of COVID-19 infection ranged from 2.38 ± 0.72 to 1.47 ± 0.71 (Table 2).

All baseline characteristics showed no statistically significant difference related to participants' awareness of COVID-19 infection and its spread. Furthermore, a lack statistical significance was demonstrated in participants' perception of the role of dentists in COVID-19 prevention related to demographic, socioeconomic and health status variables (Table 3).

The correlation between baseline characteristics and participants' total awareness score of COVID-19 and their perception of the role of dentists in its prevention was weak. There was no statistically significant difference (Table 4).

Discussion

A face-to-face pilot cross-sectional survey was conducted with two main purposes. The first was to evaluate the awareness of a group of Egyptians about COVID-19 infection, and the second was to evaluate their perception of the role of dentists in COVID-19 prevention.

One of the milestones of infectious disease prevention that hinders disease progression is raising the public's level of awareness about infectious diseases. A higher level of awareness plays a significant role in primary prevention through health promotion. Moreover, it allows suspected infected individuals to recognize the early symptoms and take the necessary precautions to avoid the spread of infection as well as seek treatment at the initial disease stage (Lu et al. 2009).

The current pilot study suggested an adequate awareness regarding COVID-19 infection and its route of transmission. This might be related to the flood of information in the media, such as television programs, social media and newspapers. Moreover, the precautionary measures that have been taken by the authorities have increased the sense of the seriousness of the situation among the general population. For instance, since the middle of March 2020, a decision was made by the Presidency of the Council of Ministers to suspend study in schools and universities for a 2-week period. Then, the study was canceled and the final examinations postponed until further notice. Moreover, an expandable partial curfew was imposed. This might explain the recorded statistically insignificant difference between the different variables adopted in the present study (demographic, socioeconomic and health status) and overall awareness of the viral infection.

In Brazil, the National Health Surveillance Agency (ANVISA) has recommended that only emergency and urgent

Table 1 Frequency of baseline characteristics

Independent variables	N (%)
Gender	
Male	41 (55.4)
Female	33 (44.6)
Age (years)	
20–29	28 (37.8)
30–39	22 (29.7)
40–49	18 (24.3)
≥ 50	6 (8.1)
Education level	
Greater than secondary	12 (16.2)
Secondary school	35 (47.3)
Less than secondary school	18 (24.3)
Illiterate	9 (12.2)
Income per month	
< 1500 LE	38 (51.4)
1500–4500 LE	26 (35.1)
> 4500 LE	10 (13.5)
Material status	
Currently married	40 (54.1)
Currently unmarried	34 (45.9)
Suffer from a chronic condition	
Yes	24 (32.4)
No	50 (67.6)

Fig. 1 Number of participants based on their (a) awareness of COVID-19 infection and (b) overall perception of dentists' role in COVID-19 prevention

dental care should be performed (from 20 March 2020), and all private offices had to cancel elective treatments.

The rapid progression of the infection and daily official and unofficial data regarding the number of new cases and deaths might also be associated with the push to obtain information about the novel virus. Despite the huge amount of daily information regarding the COVID-19 virus, it is essential to refine this information into clear guidelines. However, it is early to announce well-established guidelines.

The Egyptian Ministry of Health activated the Telehealth emergency services. This step has been adopted in other countries, e.g., the USA and Brazil (Mallineni et al. 2020). Concerning dental treatment, the governmental hospitals suspended elective dental procedures, restricting treatment to urgent dental care.

This was in line with the recommendations of the National Health Surveillance Agency (ANVISA) in Brazil.

Although approximately 65% of participants' responses emphasized that dentists have a role to play in COVID-19 prevention, their responses failed to perceive the dentists' function related to the viral outbreak. The findings of the current study showed the poor perception of the participants about the role of dentists in COVID-19 prevention. This situation might be attributed to some extent to the lack of dentists' concern regarding spreading sufficient awareness among their patients. However, the ability of dentists to perform this task is linked to their scientific knowledge and adherence to the updates regarding this novel virus.

Table 2 Frequency and mean $\pm$ standard deviation (SD) of participants' questionnaire answers about awareness of COVID-19 infection and their perception of dentists' role in its prevention

Questionnaire components	Yes N(%)	No N(%)	I'm not sure N(%)	Mean $\pm$ SD N(%)
Awareness questions (Q1-Q10)				
1. Is COVID-19 spread by coughing and sneezing?	71(95.9)	0(0)	3(4.1)	1.08 $\pm$ 0.40
2. Is COVID-19 spread by saliva droplets?	72(97.3)	0(0)	2(2.7)	1.05 $\pm$ 0.33
3. Can COVID-19 be prevented?	71(95.9)	0(0)	3(4.1)	1.08 $\pm$ 0.40
4. Do you know persons who are more susceptible to serious COVID-19 complications?	1(1.4)	68(91.9)	5(6.7)	2.05 $\pm$ 0.28
5. Should a person with COVID-19 be isolated?	71(95.9)	0(0)	3(4.1)	1.08 $\pm$ 0.40
6. If a person looks healthy, can he/she be a COVID-19 carrier?	16(21.6)	15(20.3)	43(58.1)	2.36 $\pm$ 0.82
7. Do you think that there is no COVID-19 vaccine so far?	70(94.6)	4(5.4)	0(0)	1.05 $\pm$ 0.23
8. Do you know the symptoms of COVID-19?	72(97.3)	2(2.7)	0(0)	1.03 $\pm$ 0.16
9. Can disinfectant such as soap kill COVID-19?	21(28.4)	0(0)	53(71.6)	2.43 $\pm$ 0.91
10. Do you think dealing with a person with a COVID-19 is dangerous?	72(97.3)	0(0)	2(2.7)	1.05 $\pm$ 0.33
Participants' perception of the role of dentists in COVID-19 prevention (Q11-Q14)				
11. Do you think that dental offices can be a potential source of COVID-19 transmission?	10(13.5)	26(35.1)	38(51.4)	2.38 $\pm$ 0.72
12. Do you think that dentists have a role in prevention of COVID-19?	48(64.9)	17(23.0)	9(12.2)	1.47 $\pm$ 0.71
13. Last time you visited the dentist, did he/she give you any information regarding COVID-19 and its spread?	14(18.9)	60(81.1)	0(0)	1.81 $\pm$ 0.39
14. Do you ask your dentist about COVID-19 and the required prevention methods?	12(16.2)	62(83.8)	0(0)	1.84 $\pm$ 0.37

Table 3 Mean $\pm$ standard deviation and median and interquartile range of the awareness of COVID-19 infection and participants' perception of dentists' role in preventing COVID-19 spread related to baseline characteristics

Independent variables	Awareness related to COVID-19 infection			Perception of the dentists' role		
	Mean $\pm$ SD	Median (IQR)	<i>p</i> *	Mean $\pm$ SD	Median (IQR)	<i>p</i> *
Gender						
Male	7.34 $\pm$ 0.99	7(6)	0.740	1.02 $\pm$ 0.88	1(1)	0.209
Female	7.15 $\pm$ 1.06	7(4)		1.21 $\pm$ 0.78	1(1)	
Age (years)						
20–29	7.25 $\pm$ 0.93	7(1)	0.926	1.14 $\pm$ 0.89	1(1)	0.974
30–39	7.50 $\pm$ 0.74	7(1)		1.05 $\pm$ 0.72	1(0)	
40–49	6.94 $\pm$ 1.47	7.5(2)		1.11 $\pm$ 0.96	1(2)	
≥ 50	7.33 $\pm$ 0.52	7(1)		1.17 $\pm$ 0.75	1(1)	
Education level (years)						
Greater than secondary	7.31 $\pm$ 0.99	7(2)	0.403	1.10 $\pm$ 1.02	1(2)	0.678
Secondary school	7.10 $\pm$ 1.12	7(1)		1.11 $\pm$ 0.77	1(0)	
Less than secondary school	7.05 $\pm$ 0.98	7(1)		1.07 $\pm$ 0.99	1(1)	
Illiterate	7.02 $\pm$ 1.06	7(1)		1.03 $\pm$ 0.89	1(1)	
Income per day						
< 1500 LE	7.78 $\pm$ 1.11	7(1)	0.370	1.15 $\pm$ 1.01	1(0)	0.476
1500–4500 LE	7.69 $\pm$ 1.02	7(1)		1.18 $\pm$ 0.89	1(1)	
> 4500 LE	7.24 $\pm$ 0.94	7(1)		1.03 $\pm$ 0.77		
Material status						
Currently married	7.20 $\pm$ 1.22	7(1)	0.478	1.18 $\pm$ 0.71	1(1)	0.243
Currently unmarried	7.32 $\pm$ 0.73	7(1)		1.03 $\pm$ 0.99	1(1)	
Suffer from a chronic condition						
Yes	7.04 $\pm$ 1.40	7(1)	0.965	1.17 $\pm$ 0.82	1(1)	0.230
No	7.36 $\pm$ 0.78	7(1)		1.08 $\pm$ 0.73	1(1)	

*Mann-Whitney U and Kruskal-Wallis H tests; level of significance $p < 0.05$

Despite the limitations of this pilot study, such as its cross-sectional design, which cannot provide sufficient evidence of causality, this study is the first step toward more comprehensive understanding of the general population's behavior toward the current global crisis and might be an indicator of the need for policies that emphasize raising people's collective awareness about the danger of COVID-19 infection. Moreover, this study is the nucleus of further studies on a larger scale with prospective designs.

Conclusion

From the findings of the present pilot study, it can be concluded that the awareness of the general population about COVID-19 infection and its route of transmission was adequate. The participants' perception of the role of dentists in COVID-19 prevention was poor.

In Brazil, the Ministry of Health has also implemented regulations on Telehealth services to reduce disease transmission.

Table 4 Spearman's correlation between baseline characteristics and participants' total COVID-19 awareness score and their perception of the role of dentists in its prevention

Independent variables	Total awareness score		Perception of dentists' role	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Gender	0.04	0.371	0.15	0.106
Age(years)	0.02	0.449	0.02	0.443
Education level	0.10	0.203	0.05	0.341
Income per month	0.11	0.187	0.08	0.240
Material status	0.01	0.483	0.06	0.316
Suffer from chronic condition	0.08	0.241	0.14	0.123

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Compliance with ethical standards

Conflict of interest All authors declare that there is no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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