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Knowledge of Dentists about COVID 19 in Mosul city Running Title: Dentists Knowledge about COVID 19 in the city of Mosul

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ABSTRACT
Introduction: The COVID 19 virus is mostly transmitted by inhalation/ingestion/direct mucosal contact with saliva droplets; however, the virus can live on hands, objects, or surfaces that have been exposed to contaminated saliva. Bioaerosols are produced often in a dental practice,
Aims: The aim of this study was to assess the knowledge of dentists in Mosul city during the COVID‑19 pandemic.
Materials and Methods: cross-sectional descriptive study which is questionnaire based for the dentists. The survey which was dependent on delivering the questionnaire directly to the dentists in their work
The survey consisted of 2 parts, first section included demographics variables and second knowledge of the participating dentists,
The data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, Descriptive statistics and, analyzed mean of knowledge by t-test and one-way ANOVA the results considered as significant when $P \leq 0.05$.
Results: This research comprised 295 dentists ranging in age from 23 to 64 years. A total of 91 (30.8 %) Consultant/Specialist dentists and 45 (15.3%) dentists had attended COVID-19 training or lectures. No significant difference in knowledge regarding age, qualification, work experience and work setting of dentists was found, also there is no significant difference in mean value of knowledge regarding male and female dentists.

I. INTRODUCTION

The scattering severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its related coronavirus disease (COVID 19) has gripped an extensive and whole international community attention and has produced widespread public health concerns. Despite the efforts to try to contain the disease spread, it has become pandemic and the world-wide community is suffering from the outbreak [1, 2, 3].

Higher viral loads have been noticed in nasal passages and the upper respiratory tract of individuals infected with SARS-CoV-2, which mean sneezes and coughs may contain higher viral loads than its precursor virus. on other hand the potential for individuals infected with SARS-CoV-2 to shed and transmit the virus while asymptomatic is much greater, and patients in the latent stages of the disease often shed the virus at a higher rate [4, 5, 6]. A dental office is an environment in which bioaerosols are regularly present, which are generated especially during the use of ultrasound or other hand pieces that produce sprays. The production of these microparticles, created mostly inside the patient's mouth, are therefore microbially contaminated and seem an unavoidable phenomenon [7, 8, 9].

An important step in keeping the health and safety of the medical health staff including dentists is by having an efficient and complete knowledge about the encounter infection, its transmission, infection control protocol, in addition to having the suitable levels of preventive behavior and use of personal protective equipment (PPE) [10, 11].

The aim of the current study was to determine the knowledge in a group of Iraqi dentists from Mosul city in regards to the (SARS-CoV-2) virus, as when individuals obtain knowledge they shall better prepared to combat and reduce the risk of transmission.

II. METHODOLOGY

The study was a cross-sectional descriptive study which was questionnaire based for the dentists and was approved by the Research Ethical Committee of the College of Dentistry and the Directorate of health in Nineveh. For

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the percentage was 78%. Some consider COVID 19 is not a dangerous diseaseand they were few.

A large percentage of the dentists had been infected till the time of collecting data 42.4%, while other 10.1% that answered I don't know had felt the symptoms, but their tests didn't show them getting the virus. Dentists who agreed to take the vaccine were only 37.6% (111). Displayed in Table (3).

Dentists' Knowledge Score (Range 1 to 10) toward COVID-19 in the Groups (Age, Gender, Qualification, Work Experience and work setting).

Table (4) displays knowledge of the dentists, it can be observed that knowledge mean of dentists according to age (23-32, 33-42, 43-52, 53-64 year) was (7.67, 7.66, 7.50, 7.41) respectively, the greatest knowledge was related to age (23-32 year) with a mean 7.67, with characteristic feature that all the answers had nearly a comparable mean to other groups

The knowledge means of dentists according to gender showed female knowledge 7.68 better than male 7.50 while knowledge means of Consultant /Specialist 7.62 greater than General dental practitioner and specialist College member with a non -dental specialty (7.61, 7.00) respectively. Knowledge mean based on work experience was equally (7.68) for both (0-5, 6-10 year) while was better 7.77 for (11-15 year) and least 7.35 for work experience more than 16 year also Knowledge was better 7.90 for academic dentists compared with (private 6.25, Governmental 7.59, Both Private and Governmental 7.52) that all the answers had nearly comparable to other, however as table (5) displays, no significant in knowledge mean values of age, qualification, work experience and work setting in each group by one-way analysis of variance (ANOVA) test, and the results showed that there were no statistically significant differences at $p \leq 0.05$ in all groups for between and within groups for all questions of knowledge.

Table (6) illustrate the comparison of knowledge mean values of gender group by t-test, and the results showed that there were no statistically significant differences at $p \leq 0.05$ between male group and female group for all questions of knowledge.

V. DISCUSSION

Because of its nature of transmission and death, the COVID-19 pandemic put the whole globe in a state of emergency [14, 15, 16]. Transmission of SARS-CoV-2 via respiratory aspirates, aerosols, and saliva mucus contact is quite likely [17, 18, 19, 20]. Most dental treatments

determining the sample size, an online Raosoft calculator was used to calculate the sample size [12, 13]. The required sample size calculated was 291 dentists, with a 5% margin of error, and confidence interval of 95%.

The survey included demographics variables displayed in table (1) and of knowledgeabout the SARS 2 virus and this part consisted of ten knowledge related questions displayed in table (2) that were prepared for this section, the respondent chose an answer from a multiple choice of three answers, 0 was assigned for an incorrect/unknown answer and 1 point was assigned for every correct answer. The total score for the knowledge questions was averaged from 10 points.

III. STATISTICAL ANALYSIS

The data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, Descriptive statisticswere used to summarize responses of the dentists to the knowledge statements. These included frequencies, percentages and means were obtained also, analyzed mean of knowledge by t-test and one-way ANOVA. the results considered as significant when $P \leq 0.05$.

IV. RESULTS

302 dentists responded to the survey, and after excluding dentists with missing data, 295 individuals were included in the final analyses.

Sample Descriptive Distribution in Relation to Demographic Information and General Information of The Participation.

Most age participants were in age group (33-42 year) were 111 dentists and (23-32 year) were 84 dentists, while older dentists were less shown in figure (1). In figure (2) showed that female participation was more than male participation in the study in ratio more than half of female 57.3% and less than half of male 42.7%. The numbers of general dental practitioner were higher than the other categories while the number of specialist college member with non-dental specialty was 2.4% shown in Figure (3).

The descriptive data displayed in figure (4)shows that work experience for years (11-15) was more than other work experience and the work experience for years (6-10) was the least. Dentists working only in the government sector composed the majority of the sample 40.7%, followed by government and private workers 39.3% then academic 18.6%, the least of whom are only private workers 1.4%. The vast majority of the answers were that COVID 19 is dangerous disease where

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produce large volumes of aerosols and droplets, which can quickly spread respiratory tract diseases within the dentist office. [21, 22, 23].

The majority of participants were general practitioners (GPs). Females predominated in this sample, which might be explained by the fact that the number of female dentists in Mosul is larger than the number of male dentists, according to data gathered from the College of Dentistry and the Nineveh Directorate of Health. High percentage of participants thought that COVID 19 a dangerous disease like study in Italy where dentists regarded the virus infection as extremely dangerous [24]. Also, Jordanian dentists thought that COVID-19 was rated highly hazardous by the majority of participants [25]. Although preventive action has been taken the number of infections with COVID 19 was high among dentists. The majority of infected dentists reported that symptoms of the disease lasted for 7-14 days until resolved.

The study found no significant association between dentists' responses to COVID-19 knowledge and their (age, gender, educational level, year of practice, or work setting) ($p > 0.05$), which was equivalent to Nepal study by Khanal and Singh (2020) [26] in contrast to a Study in Bangladeshaccording to Chowdhury et al(2020) [27]

VI. CONCLUSION

No significant difference in knowledge regarding age, qualification, work experience and work setting of dentists was found, also there is no significant difference in mean value of knowledge regarding male and female dentists.

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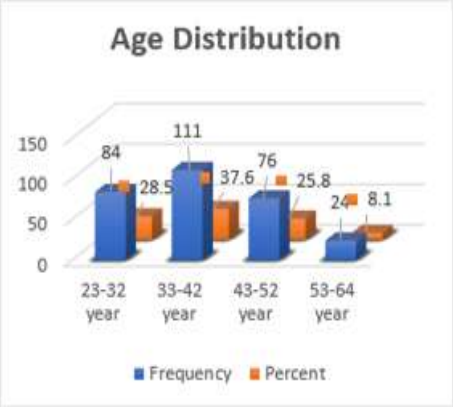

Figure (1): Age Distribution of Participants

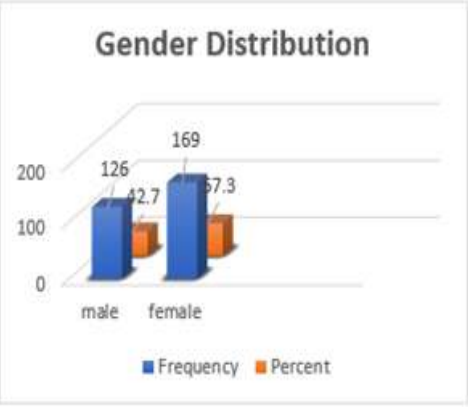

Figure (2): Gender Distribution of the Sample

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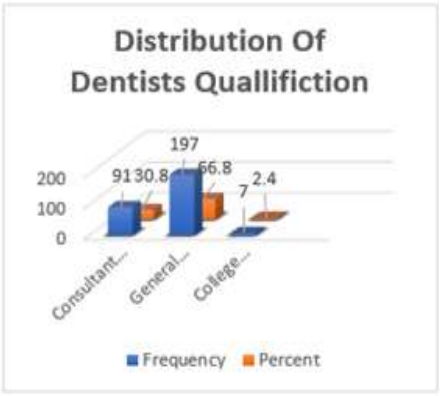

Figure (3): Qualification of Participants

Figure (4): Distribution of Work Experience

Table (1): The demographic information and general information of the participant:

Age	23–32 yr
	33–42 yr
	43–52 yr
	53–64 yr
Gender	Male
	Female
Qualification	Consultant/Specialist
	General dental practitioner
	College member with a non-dental specialty
Work experience (in years)	0–5 yr
	6–10 yr
	11–15 yr
	> 16 yr
Work setting	Private
	Governmental
	Both (private & governmental)
	Academic
Do you think that COVID 19 a is dangerous disease?	Yes
	No
	Do not know
Have you been infected with COVID 19?	Yes
	No
	Do not know
Primary source of information regarding COVID-19.	Television
	The Internet
	Social media
	Other
Shall you take a COVID 19 vaccine if available?	Yes
	No
	Not decided yet

Table (2): KnowledgeQuestions

#	Questions	Choses
1	What is the incubation period for COVID 19?	1-7 days
		20 days

		1-14 days
2	Fever, sweating, dry cough and shortness of breath, fatigue, loss of smell and taste are the main symptoms of COVID-19.	TRUE FALSE Do not know
3	Some infected COVID19 patients may come to the dental clinic and could be present without any symptoms (asymptomatic).	Yes No Do not know
4	One of the most important mode of transmission of the virus is via droplets such as in coughing and sneezing.	Yes No Do not know
5	Covid-19 is not transmitted through direct contact with respiratory tract secretions.	Yes No Do not know
6	Hand shaking could contribute to the transmission of the disease. Hand hygiene has been considered as the most critical measure for reducing the risk of transmitting of Coronavirus to patients.	Yes No Do not know
7	COVID-19 survival on plastic and stainless-steel surfaces is	3 hours 10 hours 72 hours
8	An infection may occur through touching a contaminated surface and then touching your eyes, nose or mouth?	Yes No Do not know
9	Personal protection equipment (PPE) putting on sequence is: (1) gown (2) mask (3) face shield (4) gloves	Yes No Do not know
10	PPE removal sequence: (1) gloves (2) Face shield (3) gown (4) mask	Yes No Do not know

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Table (3): **Distribution of Work Setting of Participants Dentists.**

		Frequency (N)	Percent (%)
Work setting	Private	4	1.4
	Governmental	120	40.7
	Both Governmental and Private	116	39.3
	Academic	55	18.6
	Total	295	100.0
Do you think COVID 19 is dangerous disease?	No	31	10.5
	do not know	34	11.5
	yes	230	78.0
	Total	295	100.0
Have you been infected with COVID 19?	No	140	47.5
	do not know	30	10.1
	yes	125	42.4
	Total	295	100.0
Primary source of information regarding COVID 19	Television	15	5.1
	The Internet	118	40.0
	Social media	120	40.7
	other	42	14.2
	Total	295	100.0
Shall you take a COVID 19 vaccine if available?	No	86	29.2
	Not decided yet	98	33.2
	yes	111	37.6
	Total	295	100.0

Table (4): **Means of Knowledge of The Dentists between (Age, Gender, Qualification, Work Experience and Work Setting).**

Demographic		**Mean ± SD**
Age	23-32 year	7.67±1.33
	33-42 year	7.66±1.33
	43-52 year	7.50±1.57
	53-64 year	7.41±1.44
Gender	Male	7.50±1.42
	Female	7.68±1.38
Qualification	Consultant /Specialist	7.62±1.41

	General dental practitioner	7.61±1.40
	College member with a non - dental specialty	7.00±1.29
Work Experience	0-5 year	7.68±1.28
	6-10 year	7.68±1.32
	11-15 year	7.77±1.36
	more than 16 year	7.35±1.52
Work Setting	Private	6.25± 2.21
	Governmental	7.59± 1.46
	Both Private and Governmental	7.52±1.36
	Academic	7.90±1.22

Table (5): ANOVA test of Knowledge mean values between the variables in each group.

Variables		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Group	2.565	3	0.855	0.431	0.731
	Within Groups	557.821	291	1.986		
	Total	580.386	294			
Qualification	Between Group	2.643	2	1.322	0.668	0.514
	Within Groups	577.743	292	1.979		
	Total	580.386	294			
Work Experience	Between Group	9.488	3	3.163	1.612	0.187
	Within Groups	570.898	291	1.962		
	Total	580.386	294			
Work Setting	Between Group	13.177	3	4.392	2.253	0.082
	Within Groups	567.210	291	1.949		
	Total	580.386	294			

a. Df: degree of freedom.
b. No statistically significant difference at $p \leq 0.05$.

Table (6): knowledge mean values t-test for gender differences for dentists.

Gender	N	Mean	Std. Deviation	t-value	sig
Male	126	7.5000	1.42969	1.128	0.260 (N.S)
Female	169	7.6864	1.38525		

N: Number
P>0.05
N.S: No significance