

Original Article

Awareness of droplet and airborne isolation precautions among General Dental Practitioners after the outbreak of corona virus infection in Libya

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Abstract

Aims and Objective: The purpose of this study is to obtain the level of knowledge and practice among Libyan General Dental Practitioners towards droplet and airborne isolation precautions in Zawia city, Libya. **Material and Methods:** A cross sectional survey was conducted among 110 General Dental Practitioners work at dental Hospital in Zawia, Libya. A self-assessment questionnaire composed of queries on two levels, namely knowledge and practices with respect to airborne and droplet isolation precautions was used. The data was collected and statically analyzed. Results the survey was completed by 100 potential respondents. The present study showed aware General Dental Practitioners about knowledge more than practice towards droplet and airborne isolation precautions. **Conclusion:** General Dental Practitioners seemed to have high levels of knowledge and good practice towards infection control after the outbreak of corona virus infection.

Key words: Knowledge, attitude, practice, droplet, airborne, precaution, General, Dental Practitioners, isolation.

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Introduction

General Dental Practitioners (GDPs) and their patients are at high risk of infections as they most of the time are exposed to a wide variety of microorganisms in the blood and other body fluids during dental treatment. These microorganisms include

pathogenic and nonpathogenic bacteria, viruses and fungi (1).

The epidemic of the coronavirus disease (COVID-19) created by the severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) has a universal impact on public health and

health care workers. Therefore, necessitate verify that they prevent cross-infection from infected patients to other patients and between members of the dental team.(2)

In a dental office, infections can be expedited through several routes, including direct contact with oral fluids, blood or other secretions; indirect contact with contaminated operator equipment, instruments or environmental surroundings; or contact with airborne contaminants sitting in either droplet splatter or aerosols of oral and respiratory fluids (3).

Infected droplets can transmit some diseases by contacting surfaces of nose, eye or mouth. Droplets include microorganisms can be generated when an infected person coughs, sneezes or talks. Droplets are huge to be airborne for long periods, and quickly settle out of air. (4)

Oral fluids can become aerosolized during dental treatments and microorganisms from the oral cavity will contribute to the spread of infections. Aerosols are particles less than 5 micrometers in diameter. The smaller particles of aerosols have the potential to penetrate and lodge in small passages of lung are thought to carry the greatest potential for transmitting infections. (1)

Moreover, other infectious are transfer of pathogens from patient to patient, without the interference of the dental team through a surface located in the dental clinic. Air-borne infections can also take place via an inefficient ventilation system in the dental clinic environment.(5)

In the United States, the Centers for Disease Control and Prevention (CDC) have advanced universal precautionary measures for infection control in dental settings. These guidelines include standard precautions and transmission based isolation precautions, which aim to safe work guarantee environment and potentially prevent more ever transmission of infections.(7-8)

Since the occurrence of viral infectious diseases, such Coronavirus disease SARS and new influenza variants the dental clinic should also be considered as a possible origin of transmission. Because these Hospital air, they are strict to control and very little is known about the quantity and type of airborne microbes in dental practice. (6) Keep reading to learn more about the common types of airborne diseases and what you can do to protect yourself from catching them.

The aim of this position paper to determine the level of knowledge and practice among General Dental Practitioners towards droplet and airborne isolation precautions after the outbreak of corona virus infection in Zawia, Libya.

Material and Methods

A cross sectional survey was conducted in May 2021, at Zawi city, Libya among 110 General Dental Practitioners, the sample was randomly selected among GDPs were worked at Zawia dental Hospital.

Questionnaire design developed by Askerian et al. (1) and Jain et al. (4) in line with the CDC guidelines for

evaluating awareness of droplet and airborne isolation precautions, with slightly modification.

Adding questionnaire about be vaccinated with corona vaccine, this questionnaire was necessary at the present time after the spread of a corona disease, to know the awareness of GDPs and the percentage of vaccinators.

The questionnaire with exigent instructions were sent by internet, subjects answered the questionnaire and the data collected was maintained under strict confidentiality and the Investigators gathered the data.

Knowledge and practice of respondents with respect to droplet and airborne precautions were measured using eleven questions for each of the tested categories (knowledge and practice). Knowledge and practice were assessed at two possible levels (correct; and in correct), and a score value of one was given for answers were in agreement with correct questionnaire and a score of zero was assigned to each individual answer to incorrect questionnaire.

Statistical analysis for knowledge and practice using simple descriptive analysis to get the results as frequencies and percentages.

Results

A total of 100 GDPs responded to the questionnaire giving the response rate 90.9% (100 out of 110). Table (1), Figure (1), Figure (2) showed the frequency distribution of responses of the study participants to the knowledge and practice on droplet and airborne isolation precautions.

The results of the study revealed that for knowledge the percentage of correct answers was lowest (48%) for the question number 6 (The door of patient's room with transmissible disease with air should always be closed) and was highest (100%) for the question number 8 (All health care workers should be vaccinated with B.C.G. vaccine). This suggests that the GDPs are very well knowledgeable of the droplet spread diseases and isolation of patients with such diseases. Similarly, for practice towards airborne and droplet precautions lowest and highest responses were observed for the question numbers 5 (28%) (Hospital wards should be notified prior to receiving a patient needing droplet precautions or airborne precautions) and 8 (98%) (All health care workers should be vaccinated with B.C.G. vaccine) respectively.

In general, study results suggested that GDPs considered in the present study showed good knowledge and practice towards droplet and airborne isolation precautions.

This reveals that the GDPs were very much aware of the risks of transmissible diseases and applies all their knowledge in routine practices.

Discussion

Knowledge and practice act as two pillars, which form the dynamic order of life itself. Knowledge is some information that is obtained. There could be numerous method of getting knowledge as reading, sagacity etc.

Knowledge, being the basic standard that allows one to preference between

the right and the wrong, is a mixture of comprehension, discernment, experience and skill. Practice means observation of rules and knowledge that lead to action. Thus, a good practice and right knowledge are urgent to serve and the guide patients.(4)

Previous studies have reported that the patients and dentists are at high risk of infections from different disease, in addition to occurrence of subclinical and asymptomatic coronavirus disease (COVID-19) cases in population could constitute a major threat to dental practice by transmitting infections between dentist and patients and the dental team. (9-10)

To ensure safe working environment and to prevent transmission of infection in dental practice CDC developed guidelines, which mainly included standard precaution and transmission based isolation precautions (airborne, droplet and contact precautions). Strict adherences of these guidelines are needed to prevent the potential spread of infection in dental practice.

To the best of our understanding, little of the previous studies examined general awareness of droplet and airborne isolation precautions among GDPs from Libya, especially when the concerns of infection control among health care workers increased due to the outbreak of coronavirus disease (COVID-19) infection (April-May-June 2013).

This study were different for study by Mehrdad Askarian, Kamran Mirzaei et al 2005 (1). Which carried out among the Dental health professionals in Shiraz,

Iran. However, their study revealed a poor compliance with airborne and droplet isolation precautions among Iranian professionals. In comparison to this, the level of knowledge and behavior were quite good among GDPs t in Zawia, Libya.

These results are similar to those reported by Maupome et al in 2000, which detected that a relatively good knowledge among 196 dentists in Mexico, only a small number practiced according to the guide lines (11). The results of both studies suggested that more continuing education efforts are necessary. In addition, the programs could help with the identification of work-related infection risks, isolation precaution education and the appropriate training on infection control and assigned duties for specific personnel (12, 13).

Abdul Baseer et al in 2016 found similar results from a survey given to a group of dental health professionals, which results showed good knowledge and practice towards droplet and airborne isolation precautions during outbreak of MERS (Middle East Respiratory Syndrome), corona virus infection in Riyadh city, Saudi Arabia. .(14)

These results are different to those reported by Mc Carthy and Mc Donald in 1997 on general Canadian dentists and found that good result for the use of the recommended infection control were ageless 40 years, lack of concern regarding the increased personal risk or cost of infection control procedures. We found that the GDPs in Zawia, Libya had a good knowledge regarding the isolation precautions. (15)

The high percentage of the correct answers to the questions about all health care workers should be vaccinated with B.C.G. vaccine revealed a good knowledge and practice level and it is one of the compulsory vaccinations in the Libyan state.

One of the limitations of this study was that we could not supervise the responder's practice, so we had to rely on their subjective self- assessment. Therefore, the responses might not

have accurately reflected the true levels of knowledge and behavior, and thus, the reported level of practice might be lower than the real level.

It is important for any hospital or a dental clinic to set up its own measures to prevent the spread of infectious and transmissible diseases. For this purpose, it is important that the dental health care professionals be aware of the risks and the seriousness of infections.

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Table 1

Frequency distribution of answers regarding knowledge and practice on droplet and airborne precautions:

N.	Questions	Knowledge		Practice	
		Correct	Incorrect	Correct	Incorrect
1	Patients with a droplet spread disease or with an airborne transmissible disease should be received in an isolated room	74%	26%	30%	70%
2	Patients with a droplet spread disease should be kept at a distance of at least 150 cm	95%	5%	69%	31%
3	Patients with a droplet spread disease should wear a mask during transport	68%	32%	83%	17%
4	Mask should be worn if or when a subject is within a 90 cm distance from a patient under droplet precaution care	85%	15%	40%	60%
5	Hospital wards should be notified prior to receiving a patient needing droplet precautions or airborne precautions	80%	20%	28%	72%
6	The door of patient’s room with transmissible disease with air should always be closed	48%	52%	30%	70%
7	Wearing mask is necessary when entering room of patients with clear symptom airborne transmissible disease	60%	40%	55%	45%
8	All health care workers should be vaccinated with B.C.G. vaccine	100%	0%	98%	2%

9	All health care workers should be vaccinated with corona vaccine	88%	12%	70%	30%
10	Patients requiring airborne precautions should wear a gloves when being transported	88%	12%	59%	41%
11	Health care workers should be wear a gloves when receiving a patient needing airborne precautions	95%	5%	80%	20%

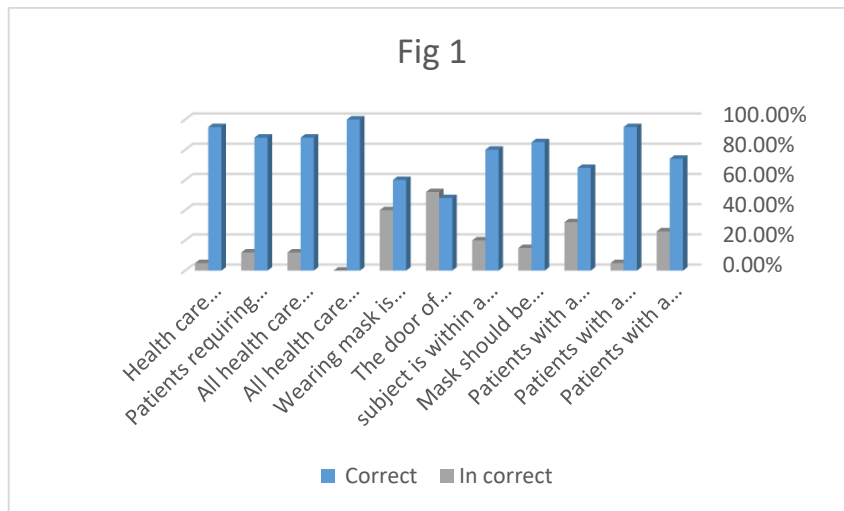


Fig 1: Frequency distribution of answers regarding knowledge on droplet and airborne precautions.

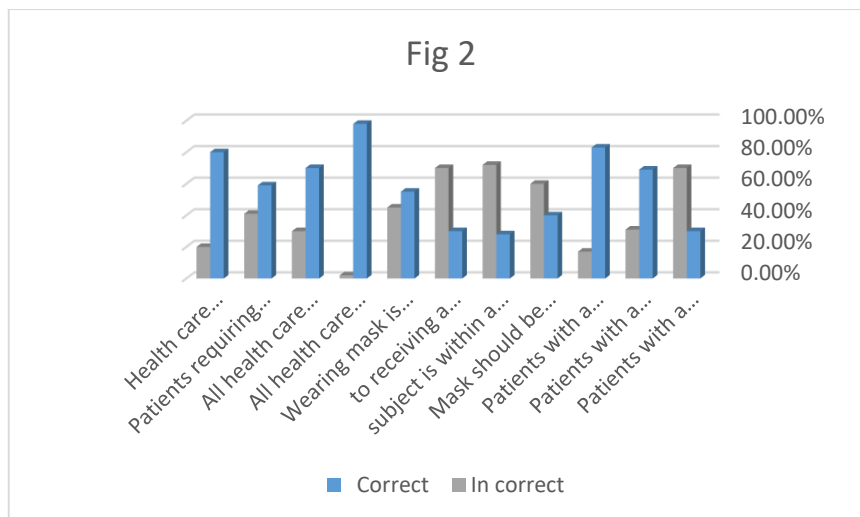


Fig 2: Frequency distribution of answers regarding practice on droplet and airborne precautions.