Precautions and Importance of PPE - Assessment of Knowledge Among Dental Health Care Workers - A Questionnaire Based Study

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ABSTRACT
Healthcare workers are at constant risk due to the infections which occur due to exposure of blood and other body fluids from infected patients. Standard precautions must be taken like maintenance of personal hygiene, use of personal protective equipment, etc. to stay safe. Thus, this study assesses the knowledge of health care workers on the importance of PPE in order to improve the awareness towards the usage of PPE during essential periods of risk. The study setting was done through an online survey among health care workers. The collected data were then analyzed in SPSS online software and the results were plotted in the form of bar graphs. From the data, it is inferred that knowledge of PPE among health care workers is well known in the majority of the responders. But more awareness must be created on the importance of PPE for the safety and welfare of all health care workers. Health care workers are at constant risk due to the infections which can occur due to exposure of blood and other body fluids. PPE plays a major role in protecting against these infections. Thus, it is important and mandatory to wear them on a daily basis for a safe and protective work environment.

INTRODUCTION
Healthcare workers are at constant risk due to the infections which occur due to exposure of blood and other body fluids from infected patients (Sawada et al., 2017). Standard precautions must be taken like personal hygiene, use of personal protective equipment, safe management, disposal of sharp material, disposal of chemical waste, cleaning the decontamination of reusable equipment, safe management of body fluid spillages, maintenance of the clean clinical environment and safe management of laundry. Many oral diseases which are commonly seen are cancer, periodontal disease, etc., which may also require treatment with judicious use of PPE (Shree et al., 2019).

There are several types of PPE like gloves, aprons, long Sleeve gowns, surgical masks, eye goggles, face visors and respiratory masks (Hersi et al., 2015). Use of PPE among healthcare workers creates a physical barrier between the user and the microorganisms, thus preventing the contamination of mucous membrane airways, skin, clothing and hair (Hakim et al., 2016). Studies have shown...
various reasons for not using PPE. They include non-availability, uncomfortable, non-affordability etcetera (Loibner et al., 2019). Nosocomial infections can be transmitted by direct contact and it can be prevented by adapting standard precaution guidelines (Izadi, 2018). Healthcare workers must take precautions without exception towards patients with hepatitis B, hepatitis C or human immunodeficiency virus to limit the rate of infection (Hon et al., 2008). Prospective studies have shown that pre-cutaneous exposure has an estimated risk of about 0.3%, 6 to 30% and 1.8% for HIV, hepatitis B and hepatitis C.

Many awareness studies have been performed in dental students (Palati et al., 2020; Prasanna and Gheena, 2016). Our team has done other survey studies (Uma et al., 2020; Hannah et al., 2018), but none of the studies has focussed on the importance of PPE. Certain evidence based studies have also been performed on dental practitioners (Ahad and Gheena, 2016; Manohar and Abilasha, 2019). Due to the previously done studies on awareness of surgical specimen handover, biopsy handling etc. (Krishnan et al., 2018; Sheriff and Santhanam, 2018), it has led us to work on the importance of PPE in the handling of patient tissues as well. Many tooth related studies which are used for identification (Abitha and Santhanam, 2019; Gunasekaran and Abilasha, 2016), and other disorders (Sukumar and Padavala, 2018; Palati et al., 2019) have been performed in dental students, but studies on the knowledge about the importance of PPE has not been done. Hence, the presence study had been carried out to fill the gap and improve the current perception about PPE is the need of the hour.

The use of PPE is vital in safeguarding the health care workers and the spread of infection. Certain steps should be taken to ensure the adequate availability of PPE (Andersen, 2019; Harrita and Santhanam, 2019). Strict infection control guidelines should be followed, periodic reinforcement and training programmes are needed for all levels of healthcare workers (Reddy et al., 2019). Due to inappropriate use and lack of adequate knowledge on infection control practices, periodic retraining is needed. The aim of this study is to know the knowledge among healthcare workers and create more awareness on the importance of PPE.

MATERIALS AND METHODS

The study setting was through an online survey among healthcare workers. The usage of online surveys is time saving and also involves various numbers of people. There were a hundred participants involved in the survey. The sampling was done by a simple random sampling method.

A questionnaire comprising 16 questions was posted on an online survey platform the question air validity checking was performed by consulting an expert. The data collection was done through Google forms and data manipulation through MS Excel. The data obtained were plotted in the form of bar graphs.

The statistical software used for analytics included SPSS software. The statistical test used was descriptive. Correlation analysis was done by chi square test using SPSS software. Occupation or knowledge is considered as dependent variables and age, height, weight, the sex was considered as independent variables.

RESULTS AND DISCUSSION

A total of hundred participants participated in the survey where 41.5% were female and 58.5% were male (Figure 1). Out of these hundred participants, 89% of participants were between 20 to 30 age...
groups, 8% of the participants were between 30 to 40 age groups and 3% of them were above 40 (Figure 2). In the survey, 75% of the participants were aware of PPE (Figure 3) and 72.3% of participants wear it every day at work (Figure 4). 77% of the participants were aware of the importance of PPE (Figure 5). 65% of the participants said PPE protects against diseases and infections (Figure 6). 64% of the participants felt uncomfortable in PPE (Figure 7).
Figure 9: The frequency distribution of respondents advising co-workers in wearing PPE

Figure 10: The frequency distribution of the knowledge on different types of PPE

Figure 11: The frequency distribution of the PPE, which is used regularly by the respondents

Figure 12: The frequency distribution of the several reasons for not wearing PPE

Figure 13: The frequency distribution of the habit of reusing PPE among the respondents

Figure 14: The frequency distribution of the habit of sharing PPE with others
Figure 15: The frequency distribution of the knowledge of the increased risk caused due to reusing and sharing of PPE

Figure 16: The frequency distribution of the opinion of spreading more awareness of PPE

Figure 17: The association between age and the awareness of PPE among the respondents

Figure 18: The association between age and knowledge of the importance of PPE among the respondents

Figure 19: The association between age and the uncomfortable feeling about PPE among the respondents

Figure 20: The association between age and the knowledge of different types of PPE among the respondents
72.7% of the participants said they have seen co-workers not wearing PPE (Figure 8). Out of 72.7%, 68% of the participants advised them on wearing it (Figure 9). 72% of the participants were aware of the different types of PPE (Figure 10) where 14% of them used gloves frequently, 6% of them used goggles frequently, 30% of them used masks, 12% of them used gowns and 38% of them used everything (Figure 11). In this survey, there are several reasons listed for not wearing PPE where 28% felt uncomfortable, 25% said it was due to nonavailability, 28% were not aware of the importance and 19% of them did not wear PPE due to non-affordability (Figure 12).

In the survey, 75% were aware of PPE and 77% were aware of the importance of PPE. In a recent study, a collaborative approach towards improving healthcare workers safety was done and an institutional policy where they needed the support to promote the use of engineering controls, safety work practice and PPE (Sheldon, 2019). 64% of the participants in the survey feel uncomfortable while wearing it. Emloys who believe PP or not necessary or feel uncomfortable or at high risk. This kind of vulnerable and unproductive attitude can lead to higher risk and it happens to have many hospitals (Institute of Medicine, 2007).

72.7% of the participants have seen their co-workers not wearing PPE during work. Another study said 89% of the professionals have observed healthcare workers not wearing PPE (Institute of Medicine, 2007). Thus, health care workers and professionals must have empathy in situations like pandemics and advise one another on wearing PPE (Prasanna and Gheena, 2016). In this study, 30% of them use face masks frequently. Skin and protective equipment, gloves, coveralls, safety shoes, helmets, goggles, respiratory protec-
tive equipment, all come under PPE (Garrigou et al., 2020).

The most frequently cited factors for not wearing PPE is discomfort and satisfaction. In this study, some healthcare workers believe p p is not necessary as it is too heavy and will be hard to wear for a long time. It prohibited breathing and communicating, irritated skin and put pressure on your body (Akbar-Khanzadeh, 1998). Sometimes even microbial variations can cause many metabolic diseases. Maintaining hygiene is very important while wearing PPE (Sarbeen and Gheena, 2016). 65% of the participants said that they feel there is a shortage of supply of PPE. In a study, there is a lack of adequate PPE to frontline health workers can cause high rates of infection (Ranney et al., 2020).

61% of the participants reuse their PPE (Figure 13) and 64% of them share their PPE with others (Figure 14). 74% of the participants said reusing and sharing PPE with others can increase the risk of spread of infection (Figure 15). 73% of the participants feel more awareness should be created for PPE (Figure 16). In this study, the correlation has been done between age and some parameters like awareness of PPE, regular usage of PPE, knowledge on PPE etc. Which are depicted in the form of bar graphs (Figures 17, 18, 19, 20, 21, 22, 23 and 24). The response ‘yes’ is denoted by blue colour and ‘no’ is denoted by red colour. Thus, PPE should be available in adequate amounts for the safety of all healthcare workers. This survey was circulated on a small population. If it were done on a large population, the results would differ. A clinical trial study would have given a better understanding on the use of PPE.

CONCLUSIONS

From this study, it is evident that professionals and the majority of healthcare workers are aware of the importance of PPE. But as healthcare workers, it is our duty to spread awareness on the importance of PPE to the people who do not wear them on a daily basis for a safe and productive work environment.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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