MEDICAL CHANNEL

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ASSESSMENT OF INFECTION CONTROL AWARENESS IN DENTISTRY AMONG RESIDENTS OF JAMSHORO POWER COMPANY LIMITED JAMSHORO

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ABSTRACT

Background: Infections through dental surgical procedures might be due to improper handling and disposal of infected clinical waste products. Factors that affect awareness regarding infection control include age group, gender, education, language and geographical location, with increased awareness of the possible transmission of infection in dentistry.
Objective: To assess the perception and awareness among residents of Jamshoro Power Company Limited (JPCL) about infection control measures, as well as their knowledge on methods of sterilization in dentistry.
Methods: Total 600 study subjects of either gender with age 20-45 years, residents of JPCL residential colony Jamshoro were included through convenient sampling. A questionnaire was used including demography, perception on the use of gloves, facemasks and goggles on dental practice, methods of sterilization, knowledge of cross infection in dentistry and the protective function of gloves and face mask. SPSS was used for analysis.
Results: There were 394 male and 206 females. 75.8% believed that dentist should always wear gloves. 64.7% said dentist cannot treat more than one patient with same gloves. 11.8% had knowledge about the sterilization. 18.6% always asked about the way of sterilization. 69.1% were not agreed to receive the treatment from dentist who was not immunized against hepatitis B.22% had knowledge about the infection during dental treatment.
Conclusion: Subjects revealed inadequate knowledge towards the use of gloves, face mask and spectacles. However, their knowledge regarding the spread of hepatitis-B, infection, sterilization and immunization was poor.

Key Words: Perception, Awareness, Infection Control Measures in Dentistry, Knowledge, Sterilization in Dentistry

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INTRODUCTION

Dentistry is the profession where big risk of exposure to infectious diseases

exists.[1,2] The use of gloves, face masks, protective gowns and spectacles play a major role in prevention of infection from dentist to patient, patient to dentist and patient to patient.[3]While doing dental procedures, patients and health care workers are very prone to get different types of infections.[4]These infections may be transmitted in a number of ways such as direct or indirect blood contact, infected instruments, environmental surfaces, oral and respiratory fluids either in droplet form or in aerosols.[5]The infection transmission chain needs three things a susceptible patient, an active amount of pathogen and a source of entrance to host.[6] Strict measures of infection control and proper disinfection of instruments and environmental surfaces are very important to avoid these transmissions.[7]

Study conducted on protective measures used by dental practitioners revealed that 78% of general dental practitioners used gloves. The reported percentage for use of face masks was 59%, whereas only 21% dental practitioners used protective gowns. On the other hand the use of protective eye spectacles was only 2%.It was reported that 92% of dental practitioners preferred to use disposable needles while the use of disposable trays was only 1%.[8]

Transmission of Hepatitis B and C virus through different dental health care procedures has been proved by various studies. A survey was conducted regarding immunization of dentists against hepatitis B virus, it was found that only 62% of dental practitioners had hepatitis B vaccination.[8]Special procedures like proper sterilization of instruments, HBV vaccination are also very important to prevent cross infection in dentistry.[9] Dental practitioners should also ponder on awareness programs regarding biomedical waste management and thinking about strategies to control spreading of infections from these wastes.[10]

Maintenance of hand hygiene before and after performing dental treatment procedures is also a major factor in controlling the risks of cross infections. It has been documented that the majority of dental practitioners use only soap and water for washing hands, but this practice of maintaining hand hygiene is insufficient for removing pathogenic micro-organisms.[11]Some studies suggests the use of pre-procedural mouth rinses during dental treatment procedures microorganisms present in the saliva of patient can contaminate surfaces which are close to the patient. It has been found that pre-procedural mouth rinses having 0.05% cetylpyridinium chloride may reduce the number of bacteria in spatters of oral fluids.[12]

Factors that affect awareness among people regarding infection control measures include age - group, gender, education attainment, language, and geographical location.[13-16]

In dental practice, professionals are highly responsible to provide safe treatment. There are no latest indexed studies and data on patient awareness of cross infection preventive measures in our environment and society, so the aim of this study is to ascertain dental patient awareness of infection control in our locality which helps in planning effective public awareness about infection control in dental patients.

MATERIAL & METHOD

Total 600 study participant of either gender with age 20 to 45 years, residents of Jamshoro power company limited colony were included in the study through convenience sampling. This cross sectional study was carried out from 2nd November 2012 to 3rd May 2013 to assess the perception and awareness about infection control measures, as well as their knowledge on methods of sterilization in dentistry. Written permission was obtained from the chief executive officer (CEO) of Jamshoro Power Company Limited (JPCL) Jamshoro. After explaining purpose of study, written informed consent was obtained from study subjects.

Infection control measures were considered as the entry, development and or multiplication of an infection agent in the human body which can be controlled by preventive measures. The awareness among study participants was considered as the consciousness of dental patients to be aware of infection control dentistry. A questionnaire was administrated for the data collection about the variables of the study like demography, perception of residents on the use of gloves, facemasks and goggles on dental practice, methods of sterilization and knowledge of cross-infection in dentistry.

The data was analyzed by using statistical package for social sciences. Descriptive statistics was used for data presentation. Frequency and percentages were calculated for quantitative variables e.g. demography, perception of residents on the use of gloves, facemasks and goggles on dental practice, methods of sterilization and knowledge of cross-infection in dentistry. Mean±SD were calculated quantitative variables e.g. age of participants. Chi square test was applied to see the association, where needed considering p-value <0.05.

RESULTS

Out of total 600 study subjects, 394 were male and 206 were females. Among the study subjects 270 subjects visited dentist in their life and 330 never visited any dentist. The visits were found significantly associated with gender ($P<0.01$) Table-1.

It was observed that 75.8% participants believed that dentist should always wear gloves. 150 subjects were reluctant to have treatment by dentist who was not wearing gloves. 212 (35.3%) subjects said that dentist can treat more than one patient with same pair of gloves and 388 (64.7%) can not the same. 55.4% subjects believed that dentist replace gloves after receiving phone call. It was observed that 80% replied that they believe dentist should always wear face mask while treating patients and also 78% subjects were not reluctant to have treatment from dentist who was not wearing face mask. It was observed that 77.5% subjects believed

that dentist should not always wear eye goggles when treating patients. 25% subjects said that only dentist will be protected by wearing gloves and 65.7% believe that dentist and patient both will be protected by the wearing gloves and only 9.3% patient said that patient alone will be protected. 15% subjects said that only dentist will be protected by wearing face mask, 75.5% answered that dentist and patient both will be protected by the wearing face mask and 9.5% believed that patient alone will be protected (Table-2).

As far as knowledge about sterilization of instruments is concerned, it was observed that only 71 had knowledge about the sterilization of instruments used for dental treatment whereas 529 had no knowledge about the sterilization (Figure-1). Only 112 subjects always asked about the way of sterilization (Figure-2). Frequency distribution is presented in Table-3.

Only 30.9% subjects agreed to receive the treatment from dentist who was not immunized against hepatitis B. It was

TABLE-1
FREQUENCY DISTRIBUTION OF GENDER AND VISITS TO DENTISTS

(n=600)		Frequency (n)	Percentage (%)	P-Value
Gender	**Male**	394	65.7%	——-
	Female	206	34.3%	
Males Visits to Dentist	**Yes**	154	39.1%	**0.000***
	No	240	60.9%	
Female Visits to Dentist	**Yes**	116	56.3%	
	No	90	43.7%	

***** Significant at 0.01 levels

TABLE-2
KNOWLEDGE OF STUDY SUBJECTS ABOUT PROTECTION HABIT OF DENTIST DURING TREATMENT.

(n=600)		Frequency (n)	Percentage (%)	P-Value
Dentist Should Always Wear Gloves	**Yes**	455	75.8%	**0.000***
	No	145	24.2%	
Reluctant to have treatment without				
gloves	**Yes**	150	25.0%	**0.000***
	No	450	75.0%	
Dentist can use one pair of glove for				
more than one patients	**Yes**	212	35.3%	**0.023****
	No	388	64.7%	
Dentist should replace gloves after				
phone call	**Yes**	332	55.4%	**0.089+**
	No	268	44.6%	
Dentists should always wear face mask	**Yes**	480	80.0%	**0.000***
	No	120	20.0%	
Reluctant to have treatment without gloves	**Yes**	132	22.0%	**0.001***
	No	468	78.0%	
Dentists should always wear eye glasses	**Yes**	135	22.5%	**0.001***
	No	465	77.5%	
By wearing gloves how will be protected	**Dentist**	150	25.0%	**0.034****
	Patient	56	9.3%	
	Both	394	65.7%	
By wearing face mask how will be protected	**Dentist**	90	15.0%	**0.046****
	Patient	57	9.5%	
	Both	453	75.5%	

** Significant at 0.01 levels* *** Significant at 0.05 levels + Not Significant at 0.05 levels*

TABLE-3
KNOWLEDGE OF STUDY SUBJECTS ABOUT STERILIZATION

(n=600)		Frequency (n)	Percentage (%)	P-Value
Do you have knowledge about				
sterilization of dental instrument?	**Yes**	71	11.8%	**0.000***
	No	529	88.2%	
Did you always asked the way of				
sterilization of dental instruments?	**Yes**	112	18.6%	**0.000***
	No	488	81.4%	

***** *Significant at 0.01 levels*

FIGURE-1
Percentage response of study subjects about sterilization of dental instruments

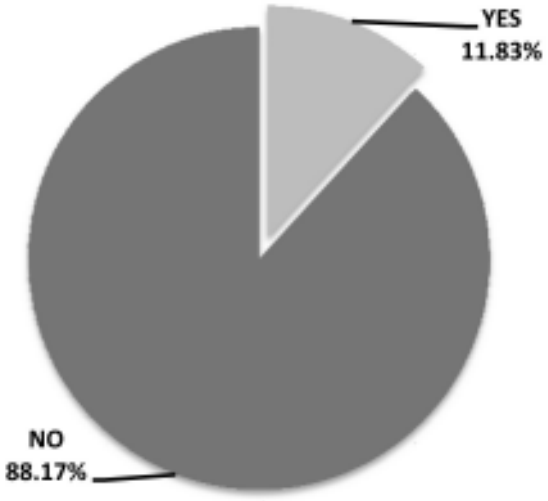


FIGURE-2
Percentage response of study subjects about habit of asking about sterilization of dental instruments

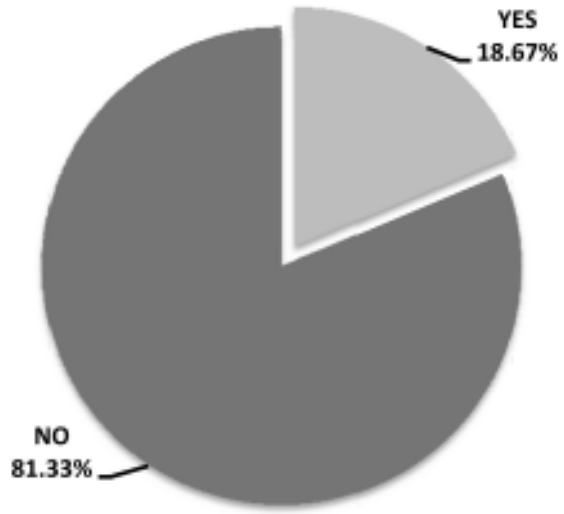


TABLE-4
KNOWLEDGE OF STUDY SUBJECTS ABOUT IMMUNIZATION OF DENTIST

(n=600)		Frequency (n)	Percentage (%)	P-Value
Like to treat with non immunized				
dentist	**Yes**	185	30.9%	**0.000***
	No	415	69.1%	
Can you get infected during				
dental treatment	**Yes**	132	22.0%	**0.000***
	No	468	78.0%	

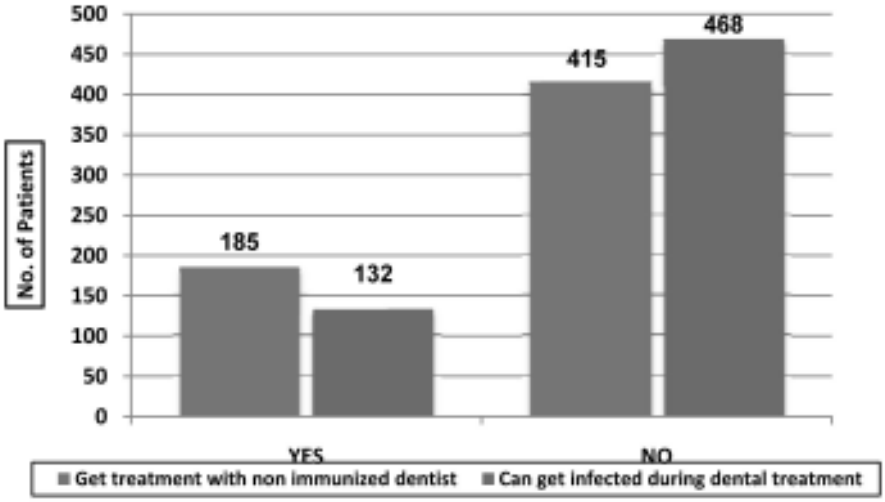
***** *Significant at 0.01 levels*

observed that most of the subjects had no knowledge about the vaccination of hepatitis B. Also only 22% subjects had knowledge about the infection during dental treatment (Table-4 and Figure-3).

DISCUSSION

This study evaluated the knowledge and attitudes of residents of JPCL, Jamshoro towards infection control measures. Taking measures required for infection control is an important part of daily dental practice from both patient's and practitioner's point of view. In this regard, it is necessary to have a good knowledge of the required measures and a positive attitude, as well as the appropriate practices in place. Individuals seeking dental care may be healthy or suffering from various

FIGUE-3
Response about immunization of dentists.



infectious diseases or may be carriers of infectious diseases that cannot be easily identified. Dilemma remains to be answered whether particular groups differ in their knowledge and attitude of infection control in dentistry; whether there is any difference in knowledge of infection control measures between previous and first time dental attainders; and whether some patients avoided or delayed seeking care because of such concerns.

In this study males visited to dentist more than females because in our culture males have more freedom so they can visit to dentist more. However, except for visit to dentist no other factors showed significant difference in the present study.In this study the less number of residents of JPCL visited the dental clinics and or hospital due to lack of awareness, limited access to dental care and high cost of dental treatment.

In this study majority of residents 75.8% knew that the dentist should wear protective gloves. The results of this study are higher than the previously reported studies by 70%, Samranayake and McDonald.[17] 60%, Adel AM et al.[18] and lower than the study conducted by Yorden KS.[19]87%, Burke, et al.[20] 84%, Azodo, et al.[21] 98.3%, Otuyemi, et al.[22] 88.8% and Sofola 98.6%.[23] It is important to use gloves during dental treatment in order to not only avoid contamination from patient's blood, saliva or infected instruments but also to prevent cross infection from patient to patient.[24] When asked about gloves use 92% of dentists stated that they treat 1 patient with single pair of gloves and this number is higher as compared to previous studies done on the matter.[25-27]Center for disease control recommended that a separate pair of gloves must be used for each patient to avoid contamination.[28] In the present study, 55% of the study subjects knew that dentist should wear new gloves for each patient while providing care. 35% felt that gloves should be changed after every patient in a study conducted by Otuyemi, et al.[22]

Use of face masks in dentistry has been advocated to protect clinicians from inhaling aerosols. In the present study, 75.5% said that both patients and dentist would be protected. When enquired about the protection provided by wearing of the gloves, 65.7% of study subjects said that gloves protect both dentist and the patient from transfer of infection. This result was lower, than reported by Azodo, et al [21] 94.3%, and higher than reported by Otuyemi, et al 63%.[22]

However, the individual responses to the use of barrier methods of infection control varied amongst different studies as compared to the present study. The wearing of gloves by dentists undertaking clinical procedures has been recommended as an essential element of dental surgery infection control.[19]The reason behind this is to prevent transmission of infection from the operator's hands to the patients and to prevent contact of blood and saliva to the operator's hands.

The use of high speed air-driven dental hand pieces and ultrasonic scalers produce large amounts of aerosol and splatter in dentistry. Such aerosol can contain pathogenic disease causing organisms ranging from influenza, tuberculosis to severe acute respiratory distress.[29-31]Use of face masks in dentistry has been advocated to protect clinicians from inhaling aerosols. In the present study, 80% of study subjects were knowledgeable about the wearing of face masks while providing care. This response was higher than that reported by Porter, et al 73%,[32] Bowden, et al 56%[33] and Adel AM et al 73%.[18]22.5% of respondents expected the dentist to wear protective spectacles routinely. This result is lower to that reported by Porter, et al.[32]

Sterilization and disinfection of instrument is of utmost significance in dental offices as it assists in preventing the

transmission of infection from patient to patient and from instrument to patient. It was found in this study that only 11.8% subjects were aware for sterilization and it might be due to limited literature is available on this subject for comparison but the result is understandable since Pakistan is a developing country and many of its areas especially Jamshoro suffer from not only a deficiency of health care workers but also from improper utilization of resources.

Cross infection control is becoming a global problem. Worldwide 300 to 400 million people are chronic hepatitis B carriers. It is important to make note of this problem especially among dentists as it is postulated that dentists and dental staff are a frequent cause of transmitting infections to themselves as well as to other patients.[34]Studies in Pakistan also show dental procedures to be the most common cause of hepatitis C transmission.[35]According to the results of our study 30.9% of subjects were willing to treat themselves from a dentist who is not immunized against hepatitis B virus reasons may be due to the lack of awareness campaigns in schools and communities. It is a well known fact that dentists are in particular vulnerable to hepatitis B and C due to the nature of procedures and instruments for dental treatment, making it vital for dentists to screen patients prior to treatment.[36]

Prevention of infection forms an essential aspect of dental practice and remains one of the most cost beneficial medical interventions available. Dentist must adopt standard precautions, which consider all blood and blood contaminated fluids as potentially infectious in their practice.[37]

The majority of subjects of this study are unaware of cross infection might be due to lack of knowledge about infectious diseases so the awareness campaigns may be started and promoted. The responses to the attitudinal questions varied among the study subjects.

CONCLUSION

Subjects revealed inadequate knowledge towards the use of gloves, face mask and spectacles. However, their knowledge regarding the spread of hepatitis-B, infection, sterilization and immunization was poor.

Less number of subjects visited to dentist due to lack of awareness and negligence thus further effort is required on the application side in order to tackle the hazard of infective disease like HIV, hepatitis B & C virus and necessary arrangement are required to promote the awareness campaigns to control the cross infection and prevention of disease and promotion of health.

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