KNOWLEDGE, ATTITUDE AND PRACTICE OF DENTISTS REGARDING CROSS INFECTION IN DENTAL TEACHING HOSPITALS OF PESHAWAR

Nadia Qazi[1], Syed Nasir Shah[2]
1. *Frontier Medical & Dental College*
2. *Sardar Begum Dental College*

ABSTRACT

OBJECTIVES:
The objective of the current study was to assess knowledge, attitude and practices of dentist regarding cross infection in Khyber College of Dentistry (KCD) and Sardar Begum Dental College (SBDC) Peshawar.

MATERIALS AND METHODS:
This descriptive cross sectional study was conducted at two tertiary care hospitals having sample size 214 with 94 males and 121 females. A pilot study was conducted at Hayatabad Medical Complex to asse ss the reliability of questionnaire. Self administered anonymous questionnaire was administered to 214 dentists. The dentist in each health care facility was observed for their knowledge, attitude and practice regarding cross infection.

RESULTS:
Knowledge of dentist's was optimum but they were lacking sufficient knowledge in areas of sterilization and cross infection due to waste material present in pipes of dental units. Significantnumbers of them 28.8% were not agreed with the role of wearing rings in cross infection during dental procedure. Although lack of hand washing and impression was considered as a source of cross infection and 33.9% reported poor attitude regarding hand washing, 39.9% were not regarding the hygiene of nails in cross infection c ontrol. Similarly only 59% of them have shown positive attitude towards the vaccination of dental professionals. Although the knowledge and attitude was seen acceptable but their practices regarding the infection control were lacking in area of use of N95 respirator, taking o ffjewelry during dental surgeries, use of filtered water, use of anti - retraction valve, use of rubber dam for aerosols, use of separate box for sharp disposal and use of disinfectants in dental units..

CONCLUSION:
From current study it was concluded that dentists have good knowledge but poor practice regarding various aspect of infection control which provide an indication either lack of availability facilities or poor supervision and monitoring, due to lack of policy and implementat ion regarding cross infection control in dental units

KEY WORDS:
Cross infection, knowledge, attitude, practice, dentistry, Sterilization, autoclave

INTRODUCTION

Infection control is a major issue in dental practice because this is an area where blood or saliva contaminations can easily occur. The mouth harbors bacteria and viruses from the nose, throat and respiratory tract. Any dental p rocedure that has the potential to aerosolize saliva will cause airborne contamination with organisms from some or all of these sources.[1] Patients, dentists and auxiliaries of all group run risks of cross infection every time they enter the dental clinic. By understanding principles of disease transmission and using infection control practices, dental personnel can prevent cross infection. [2] Common pathogens involved in dentistry cross infection are Herpes viruses, Varicella -zoster virus, HIV, hepatitis B, C and D viruses, Mycobacterium spp., Pseudomonas spp.,

Correspondence:
Dr. Syed Nasir Shah
Sardar Begum Dental College
Contact: 0333-9208868
Email: syedshah214@live.com
https://doi.org/10.37762/jgmds.2-2.49

Legionella spp. and multi-resistant bacteria there is evidence that Hepatitis B virus is a real threat for cross-infection in dentistry. The highest infectious risk is associated with accidental punctures by contaminated needles or injuries by sharp instruments. [3]Among health care professionals, dentists are more prone to infection due to their direct contact with blood and saliva on a daily basis in their offices. Although several recommendations and guidelines are issued by medical and dental society as well as government organization, studies demonstrate that cross infection is not well controlled in dental settings and hospitals.[4]

MATERIALS AND METHODS

This cross sectional descriptive study was conducted at two tertiary care hospitals (Sardar Begum Dental College and Khyber College Dentistry) with sample size 214, using non probability convenient sampling technique. Dental surgeons who completed BDS and doing their dental practice as house officers, trainee medical officers and assistant professors were included in the study. The questionnaire was pretested among dentists and necessary corrections made according to their feedback to make it more understandable. The questionnaire was explained and handed over to the participants with instruction to return it within three days. There were 14 questions to assess the knowledge, 13 questions were related to the attitude and 22 questions were related to the practice. There were different scales to assess knowledge, attitude and practice. For knowledge strongly disagree, disagree, neither agree nor disagree, agree and strongly agree options were given. Agree and strongly agree were considered as acceptable. For attitude very high, high, moderate, fair, no importance options were used where very high and high were considered as acceptable. While for practices always, often, sometimes, rarely, never options were given. Apart from principal investigator, two research assistants (medical doctors) conducted the survey. For data analysis SPSS version 15 was used. Frequency, percentages, mean and standard deviation were calculated for data.

RESULTS

Total number of respondents was 214 which included 94(43.7%) males and 121(56.3%) females. Mean age of population was 28.4 ± 7.6. Most dentists (56%) had practical experience of 1-10 years. (Table -1)

It was observed that most of the dentist had good knowledge, since 62.3% and 24.7% were strongly agreed and agreed respectively about question that hand could act as a vehicle of infection. Most of the dentists were strongly agreed (44.6%) and agreed (26.5%) that wearing finger rings during surgery act as source of infection. Only 4.2% dentists were strongly disagreed that conjunctiva causes cross infection. In regard to dental impression, 70.8% considered dental impression acting as source of cross infection while 30% were thinking it had no role. In different percentages, dentists strongly agreed to the role of aerosols (51%), and water & water pipes (36.3%) in spread of cross infection. Some dentists (27.4%) did not recognize the role of non-intact skin in transfer of infection (Table-2).

Approximately 82.8% had good knowledge about washing hands before / after patient examination where only 18.2% had poor knowledge. About 88.2% of the participants felt that wearing gloves is necessary in every contact with patient to avoid cross infection. Majority of participants (85%) considered that sterilization of hand piece is necessary for prevention of cross infection. In regarding water anti retraction valve, 33% respondents reported that it had nothing to do with cross infection. Only 18% of the respondents disagreed with the concept of ventilation in dental surgery to prevent cross infection. Results showed that majority of dentists (14% and 71%) were agreed and strongly agreed that vaccination of dental professionals can prevent spread of infection. (Table-3)

Selecting an assistant who is vaccinated against hepatitis B, 35.4% dentists had positive attitude. Only 0.9 % dentist gave no importance to cleaning the instruments before putting them in autoclave. About 40.5% dentists had high attitude for using filtered water along with anti-retraction valve in dental unit (Table-4)

In current study 13.5% dentists regularly checked autoclave and 19.5% used anti-retraction valves. Dentists used rubber dam and disinfecting the suction tank by 11.6% and 23% respectively. (Table-5)

Table1: Demographic profile.

	Participant's profile	Frequency	Percent
Gender	Male	94	43.70
	Female	121	56.27
Age categories	20-30 years	178	82.80
	31-40 years	17	7.90
	41-50 years	20	9.30
Job experience	House job	41	19.1
	Less than 1 year	33	15.3
	1-10 years	121	56.3
	10-20 years	6	2.8
	21-30 years	14	6.5

Table 2: Degree of knowledge about spread of infection

Vehicle in spread of infection	Strongly disagree	Disagree	Neither agree or disagree	Agree	strongly agree
Hands	18(8.4%)	6(2.8%)	4(1.9%)	53(24.7%)	134(62.3%)
Finger ring worn in surgery	11(5.11%)	22(10.2%)	29(13.5%)	96(44.6%)	57(26.5%)
Conjunctiva	9(4.2%)	14(6.5%)	20(9.3%)	89(41.4%)	83(38.6%)
Impression	14(6.5%)	21(9.8%)	19(8.8%)	65(30.2%)	96(44.6%)
Water and water pipes in dental unit	7(3.3%)	16(7.4%)	38(17.8%)	76(35.4%)	78(36.3)
Aerosols splashes	17(8%)	6(3%)	22(10.2%)	61(28.4%)	109(51%)
Non intact skin	15(7%)	20(9.3%)	24(11.1%)	66(30.7%)	90(41%)

Table 3: Degree of knowledge about prevention of cross infection

Cross infection questions	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Washing hands	15(6.8%)	13(6%)	9(4.1%)	44(20.5%)	134(62.3%)
Wearing gloves	10(4.7%)	6(2.8%)	10(4.7%)	40(18.9%)	149(69.3%)
Hand piece	25(11.6%)	0	8(3.7%)	54(25.1%)	128(59.5%)
Anti-retraction valve	6(2.8%)	11(5.11%)	54(25.1%)	99(46%)	45(30%)
Ventilation in dental surgery	10(4.7%)	2(1%)	27(12.6%)	74(34.4%)	102(47.4%)
Vaccinated hepatitis b dental professionals	14(6.5%)	5(2.3%)	11(5.1%)	31(14.4%)	154(71.6%)

Table 4: Attitude of dentists towards prevention of cross infection

Cross infection questions	Very high	High	Moderate	Fair	No importance
Assistant vaccinated hepatitis b	76(35.4%)	51(23.7%)	40(18.6%)	24(11.2%)	24(11.3%)
Separate washing place for instrument	96(44.6%)	63(29.3%)	28(13%)	12(5.6%)	16(7.4%)
Cleaning instrument before autoclave	123(57.2%)	50(23.3%)	27(12.6%)	13(6.1%)	2(0.9%)
Filtered water with anti-retraction valve	87(40.5%)	51(23.7%)	53(24.7%)	12(5.6%)	12(5.6%)
Lightening and ventilation of dental surgery	117(54.4%)	56(26.1%)	28(13%)	10(4.7%)	4(1.9%)
Proper waste disposal	122(56.7%)	47(21.8%)	25(11.6%)	21(9.8%)	0

Table 5: Practices of general measures for cross infection control

Questions	Always	Often	Sometime	Rarely	Never
Washing and drying instrument before putting in sterilizer	61(28.4%)	29(13.5%)	39(18.2%)	32(14.9%)	54(25.1%)
Table tops, tray unit, floor disinfecting	80(37.2%)	43(20%)	32(14.9%)	35(16.3%)	25(11.6%)
Regular check autoclave	75(34.9%)	48(22.9%)	36(16.7%)	27(12.6%)	29(13.5%)
Disinfecting the impression	71(33.1%)	43(20%)	35(16.1%)	32(14.9%)	34(15.8)
Filtered water in unit	53(24.7%)	51(23.7%)	41(19.1%)	23(10.7%)	47((21.9%)
Use of anti retraction valve	42(19.5%)	41(19%)	50(23.3%)	33(15.3%)	49(23%)
Use rubber dam	25(11.6%)	30(13.9%)	42(19.5%)	39(18.2%)	79(36.7%)
Separate box for disposing sharps	61(28.4%)	28(13%)	30(14%)	42(19.5%)	54(25.1%)
Disinfecting suction tank	49(23%)	35(16.3%)	35(16.3%)	36(16.7%)	60(27.9%)

DISCUSSION

With the alarming increase in number of TB and HIV cases, especially in Asia, the knowledge about the spread of droplet infections and isolation precautions is a must for each and every dental practitioner. In current study higher percentage of female dental practitioners (56.27%) participated which coincides with the study conducted by Ahmad et al[5] and also same results were obtained by Dubey et al.[6] Biomedical wastes contains pathogenic microorganism including viruses and bacteria. Some of these microorganisms are very dangerous and may be resistance to treatment with a high degree of pathogenicity. In current study majority of dentalpractitioner (56.7%) had positive attitude towards dental waste product disposal to avoid spread of infection. This coincides with study conducted by Ahmad et al [5], where maximum number of practitioner (96.4%) knew about harmful effects of dental wastes. Study conducted by Musar rat et al [7] observed that 93.69% were aware of biomedical waste disposal and its role in spread of infection this difference shows the lack of attitude, knowledge and interest of our dentalpractitioner towards the disposal of dental waste products. In our study, most of the prac titioner (71.6%) had good knowledge about hepatitis B vaccination which corresponds with the study conducted by kadeh et al [8] where higher percentage of practitioner had good knowledge (65%). R. Sudhakara et al reported 45.85% had good knowledge about hepatitis B prevention.[9] in current study the 62.3% dental professionals had sound knowledge about hand as vehicle in spread of infection. Forty four percent dentists agree that isolation is also necessary for cross infection control, S ixty nine percent dentists agreed to wearing gloves and 50.3% wore masks for infection control. Study conducted by Ali et al[10] reported that 98.8% dentists had a sound knowledge about isolation in infection control, and 72.5% of dental practitioner had knowledge of wearing gloves, while 100% have reported the significance of hand washing in cross infection control. Mary et al[11] reported in his study that 92% used gloves and 84% used masks. From above studies it is clear that our dental practitioner has less knowledge and attitude towards wearing gloves, masks, hand washing and role of isolation in cross infection control. This is due to flaws in our education system of less concentrating on cross infection control and also no strict rules and regulation for

implementation of universal precautions in clinical dentistry by hospital administration and government.

In current study, 33.1% dentists always disinfected theirimpressions which correspond with study conducted by Faiza et al [12] where 33.33% dentists disinfected impressions. This decrease percentage may be due to lack of knowledge and time for disinfecting impression in hospital. In most hospitals disinfectant material was not provided by hospital administration. Sterilization of hand piece is also necessary for prevention of cross infection. In a study conducted by Rabeah AA et al [13] showed that 37.9% dentists agreed about sterilization of hand piece. In study conducted by Mohiuddin et al[14] stated that 50.8% changed their hand piece for each patient. Talal et al observed that 26.32% dentists autoclaved their hand pieces at Mosul city.[15] In current study 59.5% dentists sterilized their hand pieces which is higher than above studies and shows good attitude towards sterilization of hand piece. Over all there is decreased percentage of hand piece sterilization. Reasons may be due to the perception of dentists that frequent autoclaving may lead to malfunctioning of the hand piece. Also in public sector hospitals many practitioners use single hand piece and due to burden of patients it may be difficult to find time for autoclaving hand piece for each patient. Conjunctiva is also a source of cross infection in dentistry. According to Omolara et al [16] 43.2% Nigerian dentists believed that infection can pass through conjunctiva. In current study 38.6% dentists agreed that conjunctiva is a route for cross infection.

CONCLUSION

The respondents have provided a holistic picture of their competency (knowledge, attitude and practice). Overall the practitioner had good knowledge and attitude but deficiency in practices of cross infection controls. Thus cross -contamination can place the dentist at serious risk of contracting and spreading serious illnesses. However, it is imperative for dentists to realize that solution to this risk lies within them. Prevention and taking the necessary precautions is the basic requirement that can help keep the menace of cross contamination and cross-infection away.

REFERENCES

1. *Abichandani SJ, Nadiger R. Cross-contamination in dentistry: A comprehensive overview.cron young sci 2013; 4(1): 51-8.*

2. *Khan AA, Javed O, khan M, Mehboob B and Baig S. C ross infection control. Pak Oral Dent J 2012 ;32(1):31-5.*

3. *Laheij AM, Kistler JO, Belibasakis GN, Valimaa H, De Soet JJ. Healthcare -associated v iral and bacterial infections in dentistry. Journal of Oral Microbiology 2012;1 -10.*

4. *Khanghahi BM, jamali Z, Azra FP, Behzad MN and Aghdash SH. knowledge, attitude, practice and status of infection control among Iranian Dentist and dental students: a syste mic review. J Dent Res Dent Clin Dent Prospects 2013;7 (2):55-60.*

5. *Ahmad AA, Awooda EM and Elbeshir EI. Dentists knowledge, attitude and practice towards dental waste management in private clinics -khartoum locality. I nternational journal of latest researc h in science and technology 2014;3 (4):93-6.*

6. *Dubey HV, Ingle NA, Kaur N, Gupta R and Ingle E. Knowledge, Attitude and PracticeTowards Personal Protective Measures Adapted by Dental Practitioners in Agra City - A Cross Infection Control Measure J Oral Health Comm Dent 2014;8(3):128-130.*

7. *Khatri M, Agrawal R, Reddy MGS, khatri J and kokil NS. Knowledge and practice adopted by dental practitioners and dental auxiliaries regarding biomedical waste mangment in pune. Journal of dental research and scientific development 2014;1(1):34-9.*

8. *Kadeh H, Saravani S and Golzari P. Knowledge, Attitude and Practice of Dentists Towards Patients With HIV,Hepatitis B and Hepatitis C Infections Avicenna j dent res 2014;6(1):1 -6.*

9. *Reddy RS, Swapna LA, Ramesh T and Pradeepk. Know ledge attitude and practice on hepatitis B prevention among dental professional in india. Braz j oral sci 2011; 10(4):241 -5.*

10. *Ali MF, Hussain A, Maqsood A. knowledge, attitude and practice concerning infection control measures among dental health care providers of dow university of health sciences. Pak Oral Dent J 2014;34(4):452-56.*

11. *Mary NE, Adriane k and Chia SE. Infection control knowledge attitudes and practices of dental practitioners in kampala. Afr j dent 2013;1(1):1-5.*

12. *Amin F, Sheikh AA, Quershi A and Abbas M. Prevailing knowledge and practices about dental impressions disinfection. JPDA 2014; 23(4):164-9.*

13. *Rabeah AA and Mohamed AG. I nfection control in the private dental sector in Riyadh. Annals of Saudi Medicine. 2002;22(1): 13-7.*

14. *Mohiuddin S and Dawani N. Knowledge, Attitude and Practice of Infection Control Measures among Dental Practitioners in Public Setup of Karachi,Pakistan: Cross -sectional Survey. J Dow Uni Health Sci 2015; 9(1):89-93.*

15. *Al–Salman TH, Zakaria NA and Al–Shaekh Ali MG. Handpiece asepsis among dental practitionersin Mosul City. Al–Rafidain Dent J 2006;6(1):6-11.*

16. *Uti OG, Agbelusi G A, Jeboda SO and Ogunbodede E. Infection control knowledge and practices related to HIV among Nigerian dentists. J Infect Dev Ctries 2009; 3(8):604-610.*

LICENSE: JGMDS publishes its articles under a Creative Commons Attribution Non-Commercial Share-Alike license (**CC-BY-NC-SA 4.0**). **COPYRIGHTS:** Authors retain the rights without any restrictions to freely download, print, share and disseminate the article for any lawful purpose. It includes scholarly networks such as Research Gate, Google Scholar, LinkedIn, Academia.edu, Twitter, and other academic or professional networking sites.