

Comparison of Knowledge and Attitude of Infection Control Practices amongst the House Surgeons and Post Graduate Students in a Private Dental College- A Cross Sectional Survey

Hema Seshan¹, Vharsha Bhaskar², Ashwini S.³

^{1,2}Faculty of Dental Sciences, Ramaiah University of Applied Sciences, New BEL Road, Bangalore-56007,

³Faculty of dental sciences, Ramaiah University of Dental Sciences, NEW BEL Road, Bangalore-560075

Abstract: *Dental health care professionals are generally at a higher risk of exposure to a variety of environmental and human infectious diseases that is hazardous to the dental team and patients. The aim was to determine the knowledge and attitude of infection control practices amongst the house surgeons and post graduate dental students. From 100 subjects data collected was tabulated and analysed using descriptive analysis and bivariate analyses and chi-square test. The knowledge and attitude of infection control practices amongst the house surgeons and post graduate dental students were satisfactory. A statistically significant difference was appreciated for a few close ended questions. It was concluded that both the house surgeons and post graduate dental students had a sufficiently good knowledge and attitude towards infection control.*

Keywords: Infection control, house surgeons, post graduates, personal protective equipments

1. Introduction

Infection control, occupational health hazards of the dental health care team is one of the prime concerns with respect to the control of diseases linked to blood –borne pathogens. The centre for disease control has put forth certain protocols that are associated with a dental health care team with a hope to ensure a safe working environment and prevent the further transmission of infection.

Dentistry as a profession involves the use of small, sharp instruments which are easily contaminated with blood or other fluids; there is ample opportunity for inadvertent skin wounds to the operator and staff. Such accidents include the possibility of transmission of hepatitis B, hepatitis C and human immunodeficiency virus (HIV). The other common infectious conditions, such as herpetic infections, seasonal influenza and bacterial infections in both patients and clinicians may also impact the quality of dental care.

Although several recommendations and guidelines are issued by medical and dental societies as well as government organizations, studies demonstrate that infection control mechanisms need to be strengthened in dental settings and hospitals. Hence, the research hypotheses was to assess and compare the knowledge and attitude of infection control practices amongst house surgeons and post graduates in a dental college set up in Bangalore.

2. Materials and Methods

A cross sectional survey was conducted for a period of 30 days, amongst one hundred house surgeons and post graduate students at the Faculty of Dental Sciences, Ramaiah University of Applied sciences, Bangalore. A 24 item six domains structured self-administered questionnaire,

where the first domain contains the Personal Information. The second domain concentrates on the general awareness of Infection control. The third domain concentrates on the personal protective equipment. The fourth domain involves the Protocol that is employed during operation. The fifth domain provides an overview on the precaution that have to be employed during Local Anaesthetic delivery. The sixth domain contains open ended questions.

The house surgeons from the year 2014-2015 and the post graduate students from the year 2014-2018 were included in the study. The house surgeons and post graduates who were not willing to participate and who were redundant to give their consent were excluded from the study. Institutional and informed consent was obtained from the participants.

3. Methods of Data Collection

All the hundred house surgeons and post graduate students were administered a structured self-administered questionnaire. The investigator was present only to help the students in understanding the questionnaire and did not interfere with the response or the completion of questions by the participants. At the end of data collection 20 subjects were excluded from the study as they failed to return the questionnaire and also had incomplete filled questionnaire.

4. Statistical Analysis

Data collection was done using Statistical Package for the Social Sciences (SPSS) version 22.0. Mann- Witney U test was used for comparison between the two groups. Descriptive statistics were computed and differences between groups were assessed through chi-square test, P-value<0.05 was taken as statistically significant.

5. Results

A total of 100 subjects completed the questionnaire, with a distribution of (7)25.9% males amongst the house surgeon's, (15) 28.3% males amongst the post graduates. A total of (20) 74.1% females house surgeons were females, (38) 71.17% females amongst the post graduates. Hence, it can be stated that the females predominated in the study than the males.

In the second domain there was a statistically significant difference that was observed between the house surgeons and post graduates. The p value was (0.005). A total of 100% of the post graduates 85.2% of the house surgeons strongly agreed to the fact that sterilization is the key behind any successful treatment, 14.8% of the house surgeons agreed to the fact. Table:2

In the third domain there was a statistically significant difference that was observed between the house surgeons and post graduates .86.8% of the post graduates responded to have always re-sterilized instruments between patients, whereas only 59.3% of the house surgeons and responded to have always re-sterilized instruments between the patients.

In the fourth domain there reported to have a statistically significant difference between the house surgeons and post graduates. In this study 45.3% of the post graduates instructed the patients to use chlorhexidine as a mouth rinse prior to treatment, whereas only 29.6% of the house surgeons instructed the patients.

In the fifth domain there reported to have a statistically significant difference that was observed between the house surgeons and post graduates with a p-value set at (<0.05) 81.1% of the post graduates reported to always have re sheath the needle whereas only 51.9% of the house surgeons followed the same.

Table 1: Sociodemographic variables

Comparison of Sociodemographic variables among the study groups

	House surgeon[N=27]		Post Graduate [N=53]		p-value
	n	%	n	%	
Gender					0.82
Males	7	25.9%	15	28.3%	
Females	20	74.1%	38	71.7%	
Age,yrs	Mean	SD	Mean	SD	<0.001*
	23.4	1.5	26.7	3.0	

Table 2: General awareness of infection control

Responses for the items on Domain-2 by both the study groups						
Questions	Responses	House Surgeon [N=27]		Post Graduate [N=53]		P- Value
		n	%	n	%	
Q1	No	2	7.40%	4	7.50%	0.98
	Yes	25	92.60%	49	92.50%	
Q2	Not Aware	4	14.80%	5	9.40%	0.47
	Aware	23	85.20%	48	90.60%	
Q3	Agree	4	14.80%	0	0.00%	0.02*
	Strongly Agree	23	85.20%	53	100.00%	
Q4	Autoclave	23	85.20%	43	81.10%	0.62
	Vapoclave	3	11.10%	6	11.30%	
	Boiling	1	3.70%	1	1.90%	
	UV chamber	0	0.00%	3	5.70%	

Q5	Never	10	37.00%	16	30.20%	0.31
	Rarely	8	29.60%	25	47.20%	
	Sometimes	9	33.30%	12	22.60%	
Q6	None of these	1	3.70%	3	5.70%	0.52
	Continue procedure	0	0.00%	3	5.70%	
	Stop & Reschedule Appt	8	29.60%	11	20.80%	
Q7	Stop Temp & Continue	18	66.70%	36	67.90%	0.47
	No	0	0.00%	1	1.90%	
Q8	Yes	27	100.00%	52	98.10%	0.58
	No	12	44.40%	27	50.90%	
	Yes	15	55.60%	26	49.10%	

Table 3: Personal protective equipment

Responses for the items on Domain-3 by both the study groups						
Questions	Responses	House Surgeon [N=27]		Post Graduate [N=53]		P- Value
		n	%	n	%	
Q9	Never	3	11.10%	6	11.30%	0.87
	Rarely	3	11.10%	7	13.20%	
	Sometimes	9	33.30%	14	26.40%	
	Usually	7	25.90%	11	20.80%	
	Always	5	18.50%	15	28.30%	
Q10	Never	1	3.70%	2	3.80%	0.36
	Rarely	10	37.00%	13	24.50%	
	Sometimes	1	3.70%	0	0.00%	
	Usually	4	14.80%	6	11.30%	
	Always	11	40.70%	32	60.40%	
Q11a	Never	0	0.00%	2	3.80%	0.54
	Rarely	1	3.70%	1	1.90%	
	Sometimes	4	14.80%	9	17.00%	
	Usually	4	14.80%	3	5.70%	
	Always	18	66.70%	38	71.70%	
Q11b	Rarely	0	0.00%	1	1.90%	0.45
	Usually	0	0.00%	2	3.80%	
	Always	27	100.00%	50	94.30%	
Q11c	One mask for entire day	16	59.30%	26	49.10%	0.38
	After each case	11	40.70%	27	50.90%	
Q12	Rarely	1	3.70%	1	1.90%	0.82
	Sometimes	1	3.70%	3	5.70%	
	Usually	4	14.80%	5	9.40%	
	Always	21	77.80%	44	83.00%	
Q13	Never	0	0.00%	2	3.80%	0.51
	Rarely	0	0.00%	2	3.80%	
	Sometimes	0	0.00%	1	1.90%	
	Usually	0	0.00%	1	1.90%	
	Always	27	100.00%	47	88.70%	
Q14	Sometimes	3	11.10%	3	5.70%	0.17
	Usually	6	22.20%	5	9.40%	
	Always	18	66.70%	45	84.90%	
Q15	Rarely	1	3.70%	0	0.00%	0.03*
	Sometimes	2	7.40%	2	3.80%	
	Usually	8	29.60%	5	9.40%	
	Always	16	59.30%	46	86.80%	
Q16	Something else	0	0.00%	1	1.90%	0.78
	Once in 15 days	2	7.40%	2	3.80%	
	Once in 7 days	11	40.70%	24	45.30%	
	Once in 3 days	14	51.90%	26	49.10%	

Table 4: Precautions during Local Anaesthetic delivery

Responses for the items on Domain-4 by both the study groups					
Questions	Responses	House Surgeon [N=27]		Post Graduate [N=53]	
		n	%	n	%
Q17	Never	0	0.00%	1	1.90%
	Rarely	0	0.00%	10	18.90%
	Sometimes	10	37.00%	4	7.50%
	Usually	9	33.30%	14	26.40%
	Always	8	29.60%	24	45.30%
Q18	Sometimes	7	25.90%	5	9.40%
	Usually	8	29.60%	13	24.50%
	Always	12	44.40%	35	66.00%
Q19a	Rarely	6	22.20%	9	17.00%
	Sometimes	10	37.00%	10	18.90%
	Usually	0	0.00%	6	11.30%
	Always	11	40.70%	28	52.80%
Q19b	Rarely	1	3.70%	2	3.80%
	Sometimes	4	14.80%	8	15.10%
	Usually	13	48.10%	19	35.80%
	Always	9	33.30%	24	45.30%
Q20	Never	0	0.00%	3	5.70%
	Sometimes	5	18.50%	3	5.70%
	Usually	8	29.60%	4	7.50%
	Always	14	51.90%	43	81.10%
Q21	Other	0	0.00%	1	1.90%
	Handing to nurse	0	0.00%	1	1.90%
	Needle Guard	2	7.40%	10	18.90%
	One hand technique	25	92.60%	41	77.40%

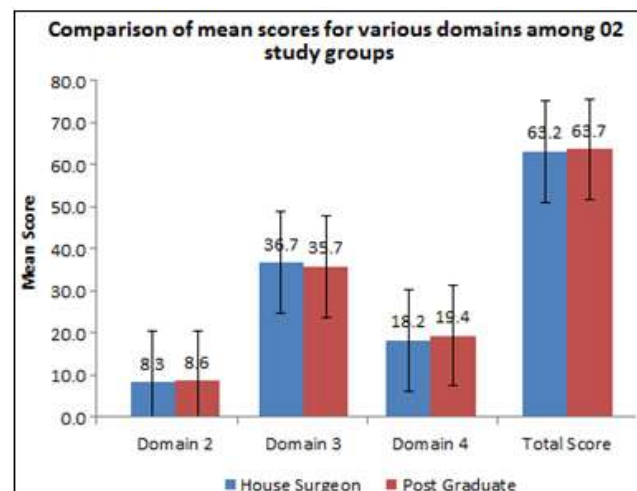


Figure 3: Comparison of mean scores of domains

The open ended questions were further divided into themes based on the responses given by each of the study participant. The major themes emerged from the open ended questions were as follows. The waste disposal protocol followed in their particular department. Most of the participants reported to have used Red, Green, Blue and yellow. Hence, a theme was generated based on the responses given by the participants as colour coded system. The second question in this particular domain was based on HIV patients and based on the responses they were elicited as the following Avoid hand to hand passage of instruments, Hands should be washed immediately after the procedure, Gloves should be changed if torn during the procedure, Disposal material should be discarded in plastic or metal container, Sterilization of all the non-disposable instruments should be carried out separately.

6. Discussion

All the dental procedures are classified as Semi critical and critical as they breach through the patients gingiva and mucosa and there is clear potential for cross-infection to occur if certain basic principles are not adhered to.

In this study the house surgeons and post graduates have a good knowledge and attitude towards the infection control practices present in the college. The results are similar to a study conducted by Sammina et al amongst the dental professionals.

In this study a statistically significant difference was observed between both the house surgeons and post graduates and responded that the instruments will be re-sterilized between the patients. This is in accordance with a study conducted by Mariana et al 2012 where 76% of all subjects used sterilization pouches, 91% always sterilized critical instruments between patients, 72% used autoclaves for sterilization. About 64% used dry heat sterilizers. All hand pieces must be sterilized between patients, but only 88% sterilized hand pieces regularly.

In this present study 100% of the post graduates strongly agreed that sterilization is the key behind any successful treatment, whereas only 85.2% of the house surgeons strongly agreed and 14.8% of the house surgeons agreed.

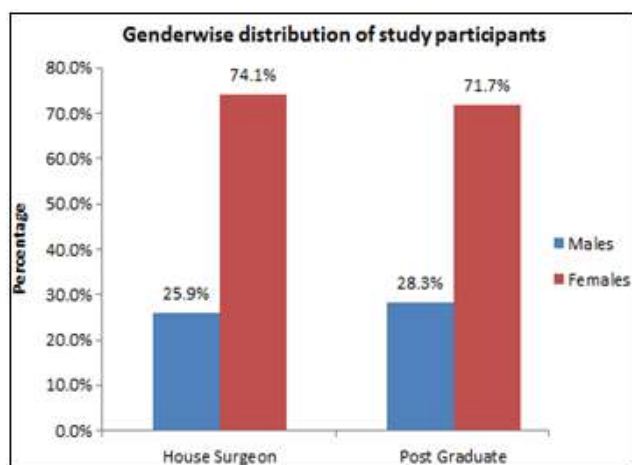


Figure 1: Gender wise distribution of study participants

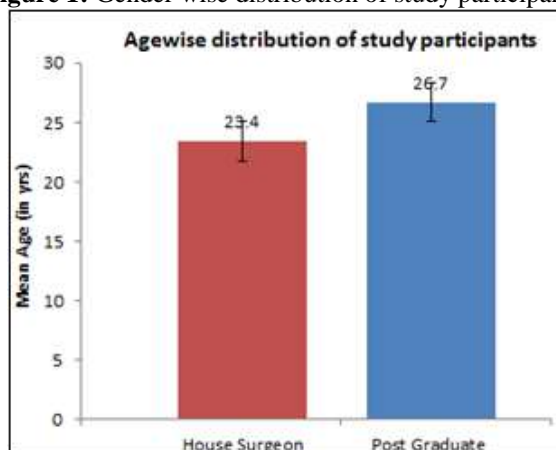


Figure 2: Age wise distribution of study participants

The results of this study are in accordance with two other studies conducted by Angelillio et al 2011 where dental Hygienist also agreed that sterilization and disinfection are one of the important factors which favour the future treatment progress.

Khan et al 2012: 94.2% of the subjects were aware of the correct procedure for sterilization instruments are important to gain the positive results of treatment.

In this study 81.1% of the post graduates reported to always have re sheath the needle whereas only 51.9% of the house surgeons followed the same. This was in accordance with a study conducted by Jaber et al 2013 where 49% of the students were aware of the procedure and only the followed the same.

In this study 45.3% of the post graduates instructed the patients to use chlorhexidine as a mouth rinse prior to treatment whereas only 29.6% of the house surgeons instructed the patients. The results of the present study are similar to studies conducted by Turkoglu et al-2009 where Chlorhexidine when used a mouth rinse reported to have a positive treatment outcome.

Gargallo et al 2016 0.12 % Chlorhexidine when used as a mouth rinse reported to have lower plaque index score and reduced periodontopathogens.

In this study majority of the study samples reported to have been practising nearly adequate infection control practices. One of the limitations of this study mentions to be cross sectional study design and a single centred study. For the study to be generalized a multi-centre study has to be conducted with a larger sample size and with a suitable sampling method.

7. Conclusion

The house surgeons and post graduates have a high level of awareness and good attitude towards infection control practices. Dental hospitals should focus on constantly motivating students in the correct and routine use of infection control measures and strictly monitor the adherence to the guidelines. Prevention and taking the necessary precautions is the basic requirement that can help keep the menace of cross contamination and cross infection away. In future all the dental colleges and hospital should enforce and monitor the infection control practices in the dental clinics. Development of written comprehensive policy on immunization of dental health care workers. Enforcement of policies procedures and guidelines on education training. Exposure prevention and post exposure management.

References

- [1] George, B., Brigi, C., Mulamoottil, V.M. and Cherian, S.A., (2014). Awareness on infection control procedures among dental students in a dental school in South Kerala. Health Sci, 1(3), pp.1-7.
- [2] Angelillo, I.F., Nardi, G., Rizzo, C.F. and Viggiani, N.M.A., (2001). Dental hygienists and infection control:

knowledge, attitudes and behaviour in Italy. Journal of Hospital Infection, 47(4), pp.314-320.

- [3] Budnyak, M.A., Gurevich, K.G., Fabrikant, K.G., Miller, K. and Puttaiah, R., (2012). Dental infection control and occupational safety in the Russian Federation. J Contemp Dent Pract, 13(5), pp.703-12.
- [4] Al-Rabeah, A. and Mohamed, A.G., (2002). Infection control in the private dental sector in Riyadh. Annals of Saudi medicine, 22(1-2), pp.13-17.
- [5] Uti, O.G., Agbelusi, G.A., Jeboda, S.O. and Ogunbodede, E., (2009). Infection control knowledge and practices related to HIV among Nigerian dentists. The Journal of Infection in Developing Countries, 3(08), pp.604-610.
- [6] Taha, F., Joseph, J., Janakiram, C. and Puttaiah, R., (2015). Dental Infection Control Practices and Public Perception: A Cross-sectional Study. Journal of International Oral Health, 7(12), p.20.
- [7] Garcia-Gargallo, M., Zurlohe, M., Montero, E., Alonso, B., Serrano, J., Sanz, M. and Herrera, D., (2016). Evaluation of new chlorhexidine-and cetylpyridinium chloride-based mouthrinse formulations adjunctive to scaling and root planing: pilot study. International Journal of Dental Hygiene.

Author Profile



Hema Seshan is Senior Professor, Faculty of Dental sciences, Ramaiah University of Applied Sciences, New BEL Road, Bangalore-560054



Vharsha Bhaskar is Post graduate student, Faculty of Dental sciences, Ramaiah University of Applied Sciences, New BEL Road, Bangalore-560054



Ashwini. S. is Professor & HOD, Dept. Periodontics, Faculty of Dental Sciences, Ramaiah university of Applied Sciences, New BEL Road, Bangalore-560054