



A Cross sectional KAP (Knowledge, Attitude & Practice) Study for Risk Assessment in Dental Patients Among Dental Interns in Kingdom of Saudi Arabia

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ABSTRACT

The medically compromised dental patients continue to increase all over the world. This study analyzed that the interns at government and the private dental schools of Saudi Arabia were trained competitively during their curriculum to identify and manage the medical problems associated with the dental patients.

Study Design: A total of 90 dental interns were randomly surveyed throughout the Kingdom of Saudi Arabia to collect feedback in a structured google form.

Results: The Microsoft Excel sheet sheet 2007 was used for preliminary statistical analysis and then analyzed using the Decision Analyst 2.00©11software. The 'z' test was used as a differentiator between the groups. The most common medical emergency episodes reported were of vasovagal attack and the hypoglycemia. Feedback predominantly came from Government institutions. In areas of mal-practice insurance, standardized case history and their BLS training, Interns from Government Dental schools fared much better than private ones. Most of the interns responded were from the western region of the kingdom [42.2%].

Conclusion: Government trained interns emerged better than private to identify, report and deal with medical compromised patients. There is definitive need to improve the knowledge and thus the confidence levels of the interns. The training gaps of interns may have regional variation in the kingdom, hence more studies must be attempted in this domain.

KEYWORDS : Basic Life support, cross sectional, Dental school, Interns, Medically compromised, Saudi Arabia, training

INTRODUCTION

The medically compromised dental patients continue to increase all over the world. The management of medically compromised patients might require modifications in oral health care [1,2]. Generally a medical emergency can be prevented by taking a thorough medical history, examining the patient and formulating comprehensive treatment plan with appropriate alterations to dental treatment as required. Despite efforts to minimize any untoward incidence, emergency situations especially in medically compromised patients may arise on the dental chair. The more common medical emergencies encountered in the dental chair include syncope, angina pectoris, cardiac arrest, postural hypotension, swallowed foreign bodies, bronchospasm, anaphylaxis, hypoglycemia and seizures [3]. In general, these emergencies can be life threatening and there have been cases of patients dying resulting from medical emergencies in dental offices [4,5]. Effective management of medical emergencies in the dental office is ultimately the dentist's responsibility.

Lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action. Therefore, dental graduates must be able to recognize and communicate adequately about relevant medical problems as well as have appropriate knowledge of oral health care and potential interactions with medical conditions [6,7].

The efficient and well trained dental interns are the foundation of a successful and well managed practice in Dental Schools to identify, deal and manage such patients. There is always a gap in training of dental students in government and private dental schools in terms of competency to deal emergency situations. To address this gap in the Kingdom of Saudi Arabia where Dental Education is developing at a very fast pace, the strengths and weaknesses of the government and private trained dental interns training needs special attention.

There are lot of studies conducted in different parts of the world. There is not enough conducted and published research regarding this serious concern involving the quality assessment of competency of dental interns especially in Kingdom of Saudi Arabia.

This study has chosen certain essential variables for Intern's competency to manage the dental patient and the independent variables - audit of expired medicines, direct communication with physician, routine use of intramuscular or intravenous injections, use of consent form, malpractice insurance, BLS training, use of Adrenaline, stand-

ardized case history format, use of oxygen cylinder, rational use of antibiotic prophylaxis and use of four handed dentistry with trained assistant to gather data in a retrospective questionnaire.

The purpose of this study was to assess the knowledge, attitude and practice among dental interns having a varied range of Knowledge and clinical experience from different government and private dental schools in identifying and managing an emergency while treating patients in the dental clinics.

Materials & Method

A randomized cross sectional study using a structured questionnaire with eleven independent variables which in turn effected the dependent variable of clinical competency of interns. An anonymous internet based circulation of structured questionnaire was done and all the dental interns were also contacted over mobile phone to encourage them to answer quickly. Out of total 120 interns contacted, 90 responses were found complete and valid. Others had to be rejected for incomplete or incoherent answers (75% of survey instruments accepted after audit). A software Decision Analyst 2.00¹¹ was utilized to calculate the Z score. Regarding the Study population and design, the dental interns population of Kingdom of Saudi Arabia was selected and the design was cross sectional randomized. The hypothesis stated was 'The dental interns training was not adequate based on eleven independent variables. The structured questionnaire and the researcher not knowing about the identity of the intern [blinding] was a choosen model for research

The questionnaire was sent via google forms to interns in different parts of the kingdom. All the data collected was entered in Excel sheet and analyzed. The structured survey instrument was utilized for data collection and a 75% response was elicited. The Microsoft office excel sheet 2007 was used for preliminary statistical analysis. This revealed candid information about the attitudes and awareness of the different interns in the kingdom. These are tabulated in the tables no 1, no 2 and no 3. The 'Z' value is used to evaluate statistically the differences between the private dental school and government dental school interns. The differences in male and female; Government and Private was also statistically analyzed for differences and significance.

Results :

A total of 90 interns with complete responses were surveyed in depth for basic information

Table no.1: Shows the distribution of sex of the participants, type of school they attended and the region of the school in the kingdom of Saudi Arabia.

The Basic information of the Interns surveyed (n=90)				Remarks
	Male	Female		
Sex	62 [68.9%]	28 [31.1%]		Predominantly Male
Type of School	Government	Private		
	62 [68.9%]	28 [31.1%]		Predominantly Govt
Region of school		Most responses from West		
North	4			4.40%
South	38			42.20%
West	20			22.20%
East	10			11.10%
Middle	18			20%

Table No. 2: Shows the differences between the Male and Female interns in eleven factor item analysis.

Sr. No.	Item	Male (n=62)	Female (n=28)	Male (%)	Female (%)	Significant Difference
1	Regular audit for expired medicines	11	5	17.74	17.85	No
2	Direct phone line to physician	8	10	12.90	35.71	Yes
3	Routinely give IV and IM injections	9	7	14.51	25.00	Yes
4	Medico-legal release form	4	10	6.45	35.71	Strong
5	Mal-practice insurance	60	28	96.77	100	No
6	Displayed BLS certificate	15	15	24.19	53.57	Yes
7	Adrenaline Use	30	10	48.38	35.71	No
8	Case history format	14	28	22.58	100	Strong
9	Oxygen cylinder	24	20	38.70	71.42	Yes
10	Antibiotic prophylaxis familiarity	28	20	45.16	71.42	Yes

Table no.3: This table shows the eleven item analysis between the interns working for Government and Private.

Sr. No.	Item	Government	Private	Government %	Private %	POSD*	Z value	Remarks
1	Regular audit for emergency meds	15	6	24.19	21.42	37.31	0.486	Weak
2	Adrenaline Use	30	10	48.38	35.71	41.66	0.548	Weak
3	Routinely give IV and IM injections	9	7	14.51	25	62.53	0.888	Medium
4	Mal-practice insurance	60	28	96.77	100	67.16	0.977	Medium
5	Direct phone line to physician	9	9	13.23	32.14	74.32	1.134	Strong
6	Displayed BLS certificate	15	15	24.19	53.57	86.4	1.491	Strong

7	Antibiotic prophylaxis familiarity	28	20	45.16	71.42	89.54	1.623	Strong
8	Oxygen cylinder	14	6	24.19	21.42	37.31	0.486	Weak
9	Case history format	60	18	96.77	64.28	99.98	3.679	Very Strong
10	Medico-legal release form	62	10	100	35.71	100	6.37	100%
11	Trained nurse / assistant	62	8	100	28.57	100	7.132	100%

The weakest and strongest difference in Government and Private interns emerged using the Z value.

Use of medico-legal release form and usage of standardized history format showed a strong difference between the males and the females.

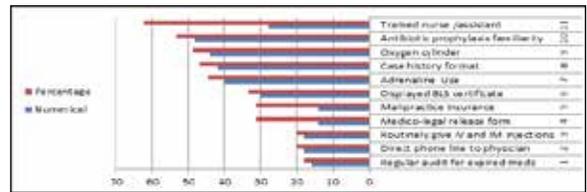


Figure No. 1:A total of eleven competency items displayed as percentage of proficiency

The most neglected areas were the regular audit for expiry medicines, keeping a direct phone line to a physician and the ability to give intravenous and intra muscular injections

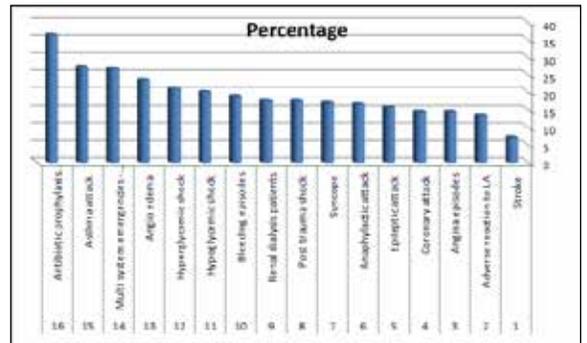


Figure No. 2 : This shows an item analysis of 16 processes actually done successfully by a set of 90 interns surveyed in the kingdom of Saudi Arabia

The rare items were stroke, reaction to local anesthetic and anginal attack..

The statistical analysis was done using Decision Analyst 2.00¹². The eleven attributes shown in figure no 2, have been analyzed for two groups of data. One comparison between male and female interns. And Two between the government and private interns. The three most common and successfully managed in this series was the Antibiotic prophylaxis, Asthmatic attack on dental chair and the geriatric patients with multi system involvement. The three least items reported were stroke, adverse reaction to LA and Anginal attack on dental chair.

Discussion

Literature is scarce on studies which have tested intern’s knowledge about dental needs of medically compromised patients. However, there are couple of studies that have been carried out among general dentists regarding their attitudes, beliefs and practices regarding dental care for such patients and to which extent they provide comprehensive dental care [8,9] It is vital to have awareness of oral health needs of medically compromised patients and preventive care,dental treatment and drugs that

can be provided safely. The result of our study throws light on the lacunae of knowledge in the assessed interns. However, the difference in scoring among interns and their confidence levels could be due to the different teaching methods of the colleges and the amount of exposure to patients. In addition the results of this study may not have external validity.

On examination of the table no.3 of our study, it is apparent that the percentage of statistical difference of the use of audit of expired medicines, use of adrenaline and regular use of oxygen cylinder all showed a very weak Z value. These were identified as the gaps of training in the dental interns. In a study by Athertons GJ et al [10,11] on medical emergencies in general dental practice, about 1500 dental practitioners and about 1000 in Wales and 500 in Scotland were surveyed and the results were quite enlightening. Atherton showed that basic drugs of emergency care were available in 90% of the respondents. This compares with 24% Government interns and 21% Private college interns in our study. The cardiopulmonary resuscitation (CPR) was carried out in management of 1.1 to 1.4% of the events in the general practice not related to GA.

Our study reflected the conclusion of Chapman's related work in Australia [12] which also throws a veritable light on the state of affairs in the Australian dental landscape as regards to the choice of emergency drugs and equipment. He polled 1250 respondents dental practitioners and found that 1 in 7 (14%) had to resuscitate a patient in their dental clinic. This figure appears to be ten times the data obtained from Atherton's work. So, obviously some geographic differences are bound to appear in different parts of the world and in Saudi Arabia. We found that interns both of government and private colleges observed the use of oxygen cylinders in practice and the difference statistically between them was weak.

This study depicted that weak Z values reflected on use of intramuscular and intravenous medications and use of oxygen cylinder and Shearer J et al [13], who expressed some very strong opinions about allowing the dentists to use the art of conscious sedation and anxiety control. They opined that they did not feel that it was appropriate for the dentists to use any form, even the simplest type of conscious sedation, they were probably concerned about their ability to manage emergencies as and when they occurred.

In our series 24% of the Government interns and 53% of the Private interns took the training for Basic life support BLS and displayed their certificates.

There was another serious concern, that the types of trainings available in the British Isles were very varied; consisting of short term courses and in depth courses which may lead to Masters in sedation [MSc] available in London. Considering this variation of training even in an established academic environment of UK, it is easy to see why Shearer and others are not very great champions of allowing the dental surgeons into conscious sedation and advanced emergency treatment area, without proper competency training. In the kingdom only one level of BLS certificate given by the Red cross, was available.

Girdler NM and Hill CM [14] also agreed with the work of Shearer J et al [13] that the use of conscious dentistry is fraught with the risks that are tangible, in terms of medical emergencies in the clinic.

The findings of my study of interns are in agreement with that of Elanchezhyan S et al [15], who also analyzed the awareness of medical emergencies in the dental office in the intern's population in South India. They analyzed 182 intern responses to come to their conclusions. In this study 56% reported receiving the Basic Life Support (BLS) and 34% said that medical emergencies were seen and managed by them. 2% of these interns responded positive for discovering angioedema in their practice and 5% had seen Angina on their dental chair. An interesting fact that came from this study was that 24% preferred pre-medication in the dental patients with known history of Epilepsy. About half the number of Government dentists and one third of the private dentists in our series treated emergencies using adrenaline routinely.

O Hallaran M [16] has given a clear map of the clinical approach in his discussion and stated that medical history and physical examination,

including the body mass index (BMI), should make the dentist determine the medical risk, then grade the patient as per the American Society of Anesthesiologists (ASA) Physical Status Classification System. It is generally agreed upon that ASA 1 and the ASA 2 are treated in the dental clinic with least complications.

Our study was predominantly done with data from the western parts of the kingdom and we found that in an interesting study by Alhamad M, Alnahwi T et al [17] who have worked in the eastern province of Saudi Arabia. Their findings of vasovagal attack and hypoglycemia being the most commonly encountered complications and our observations shared completely and are fully in agreement with them.

The level of BLS training in kingdom is available at only one level, that is provided for three days by the red cross. The facilities of Government and Private clinics compared well with each other. In this study more interns from government gave feedback as compared with private dental colleges.

Based on this research, it is advocated that some more research is needed to analyse the level of knowledge in all parts of the kingdom and subsequent changes to be made in the curriculum of dental schools so that sufficient training is given to dental graduates to deal with emergency situations especially in medically compromised patients with special emphasis on medical problems which are more prevalent in the Kingdom.

Conclusion

The Use of trained nurse, a medico-legal release form and a standardized case history form were well documented in the Government dental schools and very much less in the private dental schools. The use of Oxygen cylinder and antibiotic prophylaxis were more in the government facilities, both in terms of availability, observance and usage. The malpractice insurance is mandatory for all practitioners hence we found both government and private interns had covered themselves with it. The medical emergency cabinet was audited and checked by 21.4% to 24.19% dentists in the kingdom and through training which is perceived as a gap and needs to be improved. BLS, malpractice insurance and the standardized case history form should be made mandatory if the medical risk of dental patients needs to be improved dramatically in the coming years.

The training gaps of interns may vary with the regions of kingdom surveyed hence more studies must be attempted and specific gaps identified and filled as a part of designing their curriculum in the coming years.

Conflict of interest: The author has no conflict of interest to declare

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References

1. Scully C, Cawson RA (Editors). Medical problems in dentistry (5th edn). Edinburgh: Elsevier, 2004.
2. Little JW, Falace DA, Miller CS, Rhodus NL (Editors). Dental management of the medically compromised patient (6th edn). St. Louis: C.V. Mosby Co., 2002
3. Haas DA. Management of medical emergencies in the dental office: conditions in each country, the extent of treatment by the dentist. *Anesthesia Progress*. 2006; 53: 20-24.
4. Gonzaga HF, Buso L, Jorge MA, Gonzaga LH, Chaves MD, Almeida OP. Evaluation of knowledge and experience of dentists of São Paulo State, Brazil about cardiopulmonary resuscitation. *Brazilian Dental Journal*. 2003; 14: 220-222.
5. Rele M, Mathur M, Turbadkar D. Risk of needle stick injuries in health care workers - A report. *Indian Journal of Medical 31 OHDM - Vol. 14 - No. 1 - February, 2015 Microbiology*. 2002; 20: 206-207
6. Atherton GJ, McCaul JA, Williams SA. Medical emergencies in general dental practice in Great Britain. Part 3: Perceptions of training and competence of GPs in their management. *Braz Dent J*. 1999; 186: 234-237

7. Phillips PS, Nolan JP. Training in basic and advanced life support in UK medical schools: Questionnaire survey. *BMJ*. 2001;323:22-3.
8. Boyd BC, Fantuzzo JJ, Votta T. The role of automated external defibrillators in dental practice. *N Y State Dent J* 2006;72(4):20-3.
9. American Dental Education Association. Curriculum guidelines for management of medical emergencies in dental education. *J Dent Educ* 1990;54(6):337-8.
10. Atherton GJ, McCaul JA, Williams SA. Medical emergencies in general dental practice in Great Britain. Part 1: their prevalence over a 10-year period. *Br Dent J* 1999;186(2):72-9.
11. Atherton GJ, McCaul JA, Williams SA. Medical Emergencies in general dental practice in Great Britain Part 2: Drugs and equipment possessed by GDPs and used in the management of emergencies. *Br Dent J*. 1999 Mar 13;186(5):234-7.
12. Chapman PJ. Medical emergencies in dental practice and choice of emergency drugs and equipment: a survey of Australian dentists. *Aust Dent J*. 1997 Apr;42(2):103-8.
13. J Shearer , K E Wilson & N M Girdler .A survey of the opinions of consultant Anaesthetists in Scotland of sedation carried out by dentists. *Brit Dent J* 2004;196, 93 - 98.
14. Girdler NM, Hill CM. 1st. Oxford: Wright; 1998. Sedation Dentistry.
15. Elanchezhian S1, Elavarasu S, Vennila K, Renukadevi R, Mahabob MN, Sentilkumar B, Raja S. Awareness of dental office medical emergencies among dental interns in southern India: an analytical study. *J Dent Educ*. 2013 Mar;77(3):364-9.
16. O'Halloran Michael. The use of anaesthetic agents to provide anxiolysis and sedation in dentistry and oral surgery. *Aust Med J*. 2013; 6(12): 713-718.
17. Alhamad M, Alnahwi T, Alshayeb H et al - Medical emergencies encountered in dental clinics: A study from the eastern Province of Saudi Arabia. *J Fam Community Med* 2015; 22:175-9.