

ORIGINAL ARTICLE

Dental knowledge of accident and emergency senior house officers

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Objectives: To determine the dental knowledge of accident and emergency (A&E) senior house officers (SHOs).

Method: A telephone survey of A&E departments in England with more than 30 000 new attendances per year was conducted between November 1998 and July 1999. The questionnaire covered basic dental knowledge as well as scenarios of some common dental problems encountered in the A&E department.

Results: Most SHOs in this study saw between one and five dental problems each week. Of the 102 SHOs in this survey, 52% had no previous training in examination of the mouth. Only 52% knew the approximate date of eruption of a permanent upper central incisor. In the treatment of post-extraction bleeding, 36% knew the first line of treatment. When presented with a scenario of a patient with a dental infection, only 29% gave the optimal empirical treatment.

Conclusions: There is a need for better dental education among medical personnel. Guidelines or algorithms for the management of some common dental problems would also be useful as well as standard written advice sheets for patients with dental problems.

Most dental undergraduates spend a considerable period of time studying medicine and surgery, but most medical students receive no formal dental education. Dental problems are commonly encountered in the accident and emergency (A&E) department and in general medical practice. Many doctors in these specialties will be exposed to patients whose primary problem is of dental origin. There is little time afforded to dental education in the regular senior house officer (SHO) in-service training sessions because of the vast range of subjects to be covered in the short period of time. The mouth can be a window on the general health of the patient and its examination can be an invaluable part of the assessment of any patient.

There are few reports on the quality of care given to patients with dental problems in the A&E department. Pennycook¹ showed that despite the rarity with which the A&E doctor made a dental diagnosis, clinical outcome was not unduly compromised by the lack of dental expertise. They noted however that although the empirical treatment was generally safe, it was suboptimal. This study was carried out to assess the current basic dental knowledge of A&E SHOs.

METHOD

A telephone survey of A&E departments in England was conducted between November 1998 to January 1999 and also May

1999 to July 1999. This represented SHOs with at least three months experience in the department. In each case an explanation of the study was given, along with an invitation to any one SHO in the department at the time to complete the questionnaire. If the department was very busy, an appropriate time for subsequent contact was arranged. Before the study was started a limit of three attempts per unit was set to get a response.

Those units with more than 30 000 new attendances per year were selected from the Directory of Emergency and Special Care Units, 1998.² This excluded minor injuries units from the study. Children's hospitals were also excluded. From a total of 175 units, 150 units were selected to represent an approximate regional proportion (table 1). The units in each region were selected at random.

Of these, 102 SHOs responded, one SHO per unit. Locum doctors were excluded as their background and level of experience varied.

The questionnaire³ was divided into three sections (see appendix on the journal web site www.emjonline.com). The first section covered the amount of teaching the SHOs had at undergraduate and postgraduate levels. It also looked at the number of dental problems each SHO was exposed to in a week and over a month. They were asked about the specialist

Table 1 Regional distribution of units

Region	Number of units with >30000 attendances a year	Number of units selected	Number of units that responded
Northern and Yorkshire	25	21	16
Trent	10	8	6
Eastern	18	15	7
South East	31	27	16
London	31	26	19
South West	15	13	8
West Midlands	17	15	10
North West	28	25	20
Total	175	150	102

Table 2 Number of dental problems encountered by SHOs

Dental problems (n)	One week	One month
0	15	None
1–5	60	24
6–10	18	31
11–20	6	25
>20	1	12
Don't know	2	10

Table 3 Choice of antibiotic for dental infection

Penicillin v alone	35
Metronidazole alone	12
Penicillin v and metronidazole	29
Augmentin	6
Amoxycillin	7
Other	5
Don't know	6

Data shown as percentages.

Table 4 Advice for the patient

See own GDP as soon as possible	58
See own GMP	8
Return to A&E if no improvement	17
Refer to maxillofacial unit	6
Don't know	11

GDP, general dental practitioner; GMP, general medical practitioner.
Data shown as percentages.

services available to them. The second section covered basic dental knowledge. The SHO was asked about the number of teeth in the full adult dentition. This is of importance from the point of view of trauma where teeth may be lost and unaccounted for. It is also important to understand the difference between the permanent and deciduous dentition and also when certain teeth appear in the mouth, especially where there is the possibility of re-implanting an avulsed tooth. The final section of the questionnaire looked at two common hypothetical scenarios. Six maxillofacial units were contacted and one SHO from each unit was asked about the most common referrals for dental problems. These were dental infections and post-extraction bleeding. Pennycook¹ also showed a similar finding.

All the responses were recorded for each question and the responses were grouped. An expert panel of four consultants in oral and maxillofacial surgery were asked the appropriate responses for the hypothetical scenarios. The SHOs responses were then compared with those of the expert panel.

RESULTS

Of the 102 SHOs in this study, 52% had no previous training in examination of the mouth or management of common dental problems. Most (42%) received the training as part of the in-service educational programme. This usually took the form of a lecture or tutorial. Only 6% said they had training as part of their undergraduate studies. The SHOs were asked approximately how many dental problems they saw in one week and also over a period of one month (table 2).

All SHOs in this study group said they had access to maxillofacial services, whether it was for advice or for transferring patients to a unit with maxillofacial services on site. Overall 61% said they knew of contact numbers for the emergency on-call dentist.

Table 5 Management of bleeding tooth socket

Pressure on socket with swab	36
Call maxillofacial team	43
Suture socket	10
Call own dentist	3
Pack with adrenaline soaked swab	1
Don't know	7

Data shown as percentages.

Table 6 Further management of persistent bleeding

Refer to maxillofacial surgeons	76
Refer to emergency dentist	6
Call senior	16
Pack with haemostatic material	2

Data shown as percentages.

Only 69% knew correctly the number of teeth in the full adult dentition. None knew the number of teeth that would be expected in a 5 year old child. About half (52%) of SHOs said correctly that the permanent upper central incisors erupted into the mouth at approximately 7 years of age.

The first scenario was of a patient with a three day history of a throbbing pain over one side of the face and a gradually increasing local swelling. It was explained that the patient had experienced toothache from a decayed tooth in the same region. The patient was otherwise systemically well with no known allergies. The SHO was asked which antibiotics they would prescribe (table 3) and what advice they would give to the patient (table 4).

The expert panel considered metronidazole combined with penicillin V, augmentin, or amoxycillin as the best choice for treating dental infections. The patients should then be referred to their own dentist for further management.

The second scenario was a patient who presented with a bleeding socket after a dental extraction on the same day and their dental surgery was now closed. The SHO was asked what they would do to stop the bleeding (table 5).

Once the bleeding had stopped, the SHO was asked what advice would they give the patient on discharge. Overall 42% did not know what advice to give. None knew of any advice sheets that could be given to the patient in case of further problems. If they were unable to stop the bleeding, they were asked what they would do next (table 6).

The expert panel felt that the first line of management in an otherwise healthy patient should be pressure on the socket with a clean gauze swab. If this fails the patient should be referred to the maxillofacial team.

DISCUSSION

The aim of this study was to explore the dental knowledge of A&E SHOs. A review of the computerised patient database in two hospitals between 1 March 1998 and 31 August 1998 showed that in a busy teaching hospital 122 patients (0.4% of new attendances) with dental problems were seen and treated in the A&E department. Similarly, in a busy district general hospital during the same period 88 patients (0.5% of new attendances) with dental problems were seen. Table 7 shows the types of problems seen in this six month period at the teaching hospital (122 patients)

This is similar to the study by Pennycook¹ where they saw 107 patients (0.3% of new attendances) with non-traumatic dental problems over a period of six months in the A&E department at Glasgow Royal Infirmary. The problem most frequently encountered was toothache. Post-extraction bleeding was also common.

Table 7 Dental problems seen in A&E over six months

Non-specific dental problems	57
Toothache	23
Dental abscess	16
Oral infection	5
Bleeding tooth socket	5
Swollen face	5
Post-extraction pain	1
Cancer	1
Oral reaction to medication	1
Tongue problem	2
Facial pain	1
Dental trauma	3
Facial paraesthesia	1
Swallowed tooth	1

Only 6% of the SHOs interviewed in this study said that they had some teaching at medical school about dental problems. This was reflected in their responses to the questions on basic dental knowledge where 48% of SHOs did not know the approximate age at which one would expect to see the upper permanent incisor in a child's mouth. This may be of importance where there has been facial trauma in this age group. It is important to know whether an avulsed tooth is a permanent or deciduous tooth.

In the scenario of a patient with a potential developing dental abscess, only 29% gave the optimal antibiotic therapy, 65% of SHOs gave suboptimal antibiotic therapy, and 6% did not know which antibiotics to give. From the teaching hospital figures over a period of six months there were 16 dental abscesses and potentially over 30 other patients requiring antibiotics for orofacial infections. Dental infection is a surgical disease that initially requires antibiotics, but always requires follow up by a dentist. Only 58% said they would advise the patient to see a general dental practitioner, while 6% said they would refer to the maxillofacial unit. Post-extraction bleeding is also a comparatively common problem. It can be alarming to the patient but often requires only simple measures to stop it. Pressure on the socket with a clean gauze swab should be the first line of treatment in an otherwise healthy patient. The gauze should be of appropriate thickness and the patient should apply pressure by biting on the gauze. In this study 36% of the SHOs gave the response of "pressure with a swab" to the bleeding tooth socket. Almost as important is to give adequate instructions to the patient once the haemorrhage is arrested. In this study group 42% said they did not know what instructions to give. The rest of the SHOs gave varying combinations of advice. While none of the instructions given were inappropriate, no SHO gave adequate instructions to help prevent further bleeding. It could however be argued that the dentist who performed the procedure should have given the appropriate postoperative instructions. Ideally written instructions should be given.

The best way to assess current knowledge of A&E SHOs is by a cross sectional (prevalence) survey. A telephone survey was chosen because it incorporates the advantages of both written questionnaires and personal interviews. Telephone surveys are cost effective and accurate and they assure a high

response rate. The possibility of variation between subjects were reduced by providing a full explanation of the study, an estimation of how long it was going to take (seven minutes), and an option to phone back at a convenient time if possible. The use of a structured questionnaire by a single person reduces observer variation.

A limitation of the study is the selection of the sample from the parent population. A random sample of SHOs would have been better but it would be difficult to select such a group because this would require a directory of all the currently registered SHOs in A&E and this is a problem because they continually rotate every six months. Ideally all departments should be contacted and each SHO should be interviewed. The interview should be towards the end of their six month rotation to ensure that they had the opportunity to attend any teaching that had been organised. This would give us the best idea of their knowledge in the management of common dental problems. Nevertheless, all SHOs that were interviewed had a minimum of three months of experience in the A&E department.

RECOMMENDATIONS

This study shows there is a need for dental education among medical personnel. Many patients have a fear of dentists and will often present to their general medical practitioner or the A&E department rather than to a dental surgeon. Ideally this training should be at an undergraduate level. While the A&E doctor or general practitioner should not be overburdened with dental knowledge, it would be useful to know how to empirically manage common dental problems safely. Guidelines or algorithms for the management of some common dental problems could be available in the A&E department to which the staff could refer. Standard written advice sheets for common dental problems for patients would also be useful, for example after the management of post-extraction bleeding.

Contributors

Mr K K Patel coordinated the formulation and design of the study, collected and documented all data, and wrote the paper. He will act as guarantor. Mr P Driscoll initiated the project, participated in the design of the study and questionnaire, supervised collection of the data, and edited the paper.



Please visit the journal web site (www.emjonline.com) for a copy of the questionnaire used in this study

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Appendix 1

Section A:

1. What is your current year of training?
2. Have you had any previous training in dental problems?
3. When did you receive this training?
4. What form did the teaching take?
5. How many non-traumatic dental problems have you had to deal with in the last:
 - (a) week
 - (b) month
6. Do you have a Maxillofacial unit on site?
7. Do you know if there are any contact numbers for an emergency on-call dentist?

Section B:

1. How many teeth are there in the full adult dentition? (32)
2. Approximately what age does the upper permanent incisor appear in the mouth? (7 years)
3. How many teeth would you expect to see in a normal 5-year-old child? (20)

Section C:

1. A patient presents with a three-day history of throbbing pain over the side of his face and a gradually increasing swelling. Clinically it appears that he has a dental infection associated with a decayed tooth. He has no known allergies and is otherwise systemically well. What antibiotics would you prescribe?

What advice would you give the patient about follow-up?

2. A patient presents with bleeding from a tooth socket, having had the tooth removed earlier that day. The dental surgery is now closed. There is no underlying medical problem. What would you do to try to arrest the bleeding?

What advice would you give the patient once the bleeding stops, before you discharge the patient home?

If you were unable to stop the bleeding, what would you do next?

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