Medical screening of 1500 patients in a dental surgery: a prospective study

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SUMMARY. Communication between medical and dental practitioners about patients they have in common enhances total patient care, but such communication rarely occurs. This may be due to lack of appreciation by doctors of the medical risks to certain patients undergoing dental treatment. To ascertain a relevant medical history, prospective medical screening was performed on 1500 new patients attending a general dental practice using a standard health questionnaire followed by an interview between the patient and dentist. There were 382 (25.5%) patients with a current or past medical history of relevance to dentistry, 90 (6.0%) were taking medication of potential importance and 105 (7.0%) considered they had an intolerance to certain drugs. The screening provided a patient data base for medical and medico-legal purposes. A total of 376 (25.1%) questionnaires were filled out incorrectly and 63 of these (16.8%) had major misinformation about medical history. A small but important group deliberately misled the dentist either from fear of refusal of treatment or embarrassment about their medical history. Therefore interviews are an essential adjunct to written health questionnaires in eliciting accurate information. Formal screening of new patients is essential in general dental practice. Furthermore, general medical practitioners need to become aware of the common risks to patients undergoing dentistry. Better formal and informal communication between general medical and dental practitioners is recommended for the benefit of their mutual patients.

Introduction

THERE are many reasons why it is important for the dentist to ascertain a good medical history of the patient beyond asking 'Are you in good health?' Many people visiting the dentist are likely to have received medical intervention or to be currently under treatment;[1,2] patients may also be taking self-administered medication. In addition, increasing numbers of medico-legal cases make it imperative for the practitioner to have adequate medical knowledge of the patient, and to keep good records.[3] Furthermore, the correct management of the patient at the primary health care level should include coordinated consultations between doctor and dentist[4,5] and good records can benefit both professionals. These consultations should occur with the patient's knowledge and consent, particularly if written communication is envisaged. Unfortunately such liaison between professionals is rare. Good records can also be a rich source of data for health services research.[6]

The dentist should therefore obtain a relevant medical history prior to dental treatment. The self-administered questionnaire has the advantages of providing a written document from the patient, and a chance for the dentist to get more information verbally,[7,8] but it is not without pitfalls.

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This study was conducted to highlight three important issues for the primary health care professional: (1) the value of a formal medical screening of new patients seeking dental treatment, (2) the problems associated with self-administered questionnaires and (3) the desirability of better communication between general medical and dental practitioners.

In Ireland, the 40% of the population on lowest incomes are entitled to free medical and dental care. Free dental care is provided on a limited basis by the Public Dental Service; general dental practitioners do not participate in this service. The population visiting general dental practitioners comprise the private sector (including the self-employed, farmers, state or semi-state employees on salary, and wives and children of these groups) and insured workers under the 1981 social welfare consolidation act (including most workers from non-state bodies, state employees on a wage, and those on unemployment benefit who were previously insured at work). In the study practice 60% of the patients attend privately and 40% are insured for treatment.

Method

A prospective study of 1506 new patients attending the dental surgery was undertaken between 1 January 1987 and 30 April 1988. Patients who were illiterate were excluded; and children aged under 16 years had their medical histories completed by the attending parent.

All new patients attending the surgery completed a self-administered questionnaire — the standard Dublin dental hospital questionnaire, which had been designed to screen patients for relevant medical history. The questionnaire asks for the patient's name, address, age and sex and for medical history that is relevant to the patient or the dentist during dental treatment. The latter includes information about medication, cardiovascular disease, risk of endocarditis, hepatitis status, 'special risk' patients, and history of drug reactions. The drugs of interest are anti-asthma, cardiovascular, anticoagulant, antidepressant, anticonvulsant, diabetic and corticosteroid drugs.

The patients were given the questionnaire by a qualified dental surgery assistant and were asked to fill it in according to the written instructions. They were advised to consult with the assistant if any question was unclear. Only six patients persistently refused to complete the questionnaire; they were not offered dental treatment. Subsequently the dentist discussed all the questions with each patient (or parent). Where positive answers were volunteered on the questionnaire, the patient was asked to elaborate. Each questionnaire was attached to the new patient chart. Verbal answers at variance with the written statements were highlighted in red on the questionnaire by the dentist.

Results

Of the 1500 patients, 692 (46.1%) were male and 808 (53.9%) female. Sixty eight per cent of the presenting sample was aged between 15 and 45 years. This is an older profile than that of the general population.[9] A total of 376 questionnaires were filled out incorrectly (25.1% of all questionnaires completed). Of these, 63 (16.8%) had major omissions about medical history and 313 (83.2%) contained minor errors resulting from misunderstanding of the questionnaire, for example answering both 'yes' and 'no'.

Table 1 shows the drugs taken by the 90 patients (6.0%) tak-

Table 1. Drugs taken by 90 patients by age group.

Type of drug	Number of patients (% of those in age group)					
	<15 years (*n* = 7)	15–30 years (*n* = 17)	31–45 years (*n* = 20)	46–60 years (*n* = 32)	>60 years (*n* = 14)	Total (*n* = 90)
Respiratory system						
Bronchodilators	7 (*100.0*)	8 (*47.1*)	2 (*10.0*)	2 (*6.3*)	2 (*14.3*)	21 (*23.3*)
Cardiovascular system						
Antihypertensives and vasodilators	–	4 (*23.5*)	6 (*30.0*)	17 (*53.1*)	9 (*64.3*)	36 (*40.0*)
Anticoagulants	–	1 (*5.9*)	1 (*5.0*)	1 (*3.1*)	1 (*7.1*)	4 (*4.4*)
Central nervous system						
Antidepressants	–	2 (*11.8*)	8 (*40.0*)	8 (*25.0*)	2 (*14.3*)	20 (*22.2*)
Anticonvulsants	–	1 (*5.9*)	–	2 (*6.3*)	–	3 (*3.3*)
Endocrine system						
Oral hypoglycaemic agents	–	–	2 (*10.0*)	–	–	2 (*2.2*)
Insulin	–	1 (*5.9*)	–	–	–	1 (*1.1*)
Corticosteroids	–	–	1 (*5.0*)	2 (*6.3*)	–	3 (*3.3*)

n = total number of patients in group.

ing medication of relevance to their dental treatment. The commonest drugs were for cardiovascular problems, especially among those aged over 45 years in both sexes. Sixteen of the 20 patients taking antidepressant medication were women, and they were mostly aged between 31 and 60 years.

Three hundred and eighty two patients (25.5%) had a current or past medical history of consequence for dental treatment. Seventy patients (4.7%) admitted to a history of cardiovascular disease. The majority of these had elevated blood pressure. Eighty seven patients (5.8%) had possible endocarditis, putting them at risk during dental treatment. Sixty one of these patients (70.1%) had been told that they had a 'murmur' and the majority of them were women. It could be that flow or innocent murmurs were detected in these women during previous medical examinations, particularly during pregnancy. Only five women and two men had a combination of a cardiac murmur and a history of rheumatic fever. Full precautions were taken for all patients reporting a cardiac murmur. Of the 108 patients (7.2%) with a history of hepatitis, 106 appeared to have hepatitis A, one man was a chronic hepatitis B carrier and an intravenous drug abuser, and one woman had autoimmune hepatitis. No one claimed to have human immunodeficiency virus (HIV) infection or the acquired immune deficiency syndrome (AIDS).

Table 2 gives details for 117 patients (7.8%) at 'special risk' during dental treatment. Forty of these patients (34.2%) had a history of post-extraction haemorrhage but did not have a defined defect of the coagulation system. Four further patients (3.4%) were at serious risk from haemorrhage as a result of a coagulation disorder: three were taking warfarin, and one had Von Willibrand's disease. The next most common group were asthmatics (36 patients, 30.8%). Four (3.4%) patients had been treated for leukaemia, and one patient (0.9%) had received oral irradiation for cancer of the lip.

Of the 105 patients (7.0%) who considered they had a history of drug allergy, 54 (51.4%) had a history of 'allergy' to penicillin (41 were women), 10 (9.5%) had a reaction to aspirin, five (4.8%) to pethidine and 36 (34.3%) to other medications. As for murmurs full precautions were taken in these cases of reported drug allergy.

Table 3 gives details of the 66 major omissions made by 63 patients in filling out the questionnaire (60 questionnaires had one error and three had two). The commonest error related to history of allergy. On being questioned by the dentist 27 patients (42.9%) gave a history consistent with a drug reaction to penicillin, although this information had been omitted from their questionnaire. The next most common omission related to endocarditis risks; 14 patients had a history of a murmur or of rheumatic fever which they had omitted from the questionnaire. Only three patients admitted to having deliberately misled the dentist; one had a myocardial infarct, one had received irradiation, and one was taking antidepressants. Embarrassment or fear of refusal of treatment led to these omissions. The remainder either forgot facts or felt that they were irrelevant.

Table 2. Conditions placing dental patients at 'special risk'.

Condition	Risks to dental patient	Number (%) of patients (*n* = 117)
History of post-extraction haemorrhage	Prolonged bleeding after dental procedures	40 (*34.2*)
Asthma	Hypertensive crisis may result from interaction between beta-agonists and adrenaline	36 (*30.8*)
Pregnancy	Risks to fetus from dental x-rays and drugs	21 (*17.9*)
Diabetes	Increased dental disease severity, poor healing, anaesthetic risk	7 (*6.0*)
Coagulation disorders	Serious bleeding after dental procedures	4 (*3.4*)
Leukaemia	Bleeding tendency, osteomyelitis, hyperplastic leukaemic gingivitis, septicaemias	4 (*3.4*)
Thyroid disease	Interaction with adrenaline if excess thyroid hormone (iatrogenic or pathological)	2 (*1.7*)
Autoimmune disease	Infection to myocardium and endocardium during dental procedures	1 (*0.9*)
Epilepsy	Hyperplastic gingivitis if patient taking hydantoin drugs	1 (*0.9*)
Having received irradiation (head/neck)	Radionecrosis post extraction, xerostomia, radiation caries, periodontal destruction	1 (*0.9*)

n = total number of patients.

Table 3. Details of the 66 omissions from the 63 questionnaires.

	Number (%) of inaccurate questionnaires[a]
Omission of drug data	
Drug reaction to penicillin	27 (42.9)
Drug reaction to aspirin	3 (4.8)
Drugs for asthma	2 (3.2)
Drugs for diabetes	2 (3.2)
Drugs for depression	1 (1.6)
Drugs for cardiovascular problems	1 (1.6)
Omission of other medical data	
Cardiac murmur	9 (14.3)
Rheumatic fever	5 (7.9)
Hypertension	3 (4.8)
Myocardial infarct	2 (3.2)
Asthma	2 (3.2)
Diabetes	2 (3.2)
Angina	2 (3.2)
Thyroid disease	2 (3.2)
Hepatitis A	1 (1.6)
Having received irradiation (head)	1 (1.6)
Pregnant	1 (1.6)

[a]Three questionnaires contained two omissions.

Discussion

A quarter of the new patients in this survey had a medical history of relevance to the dentist and this information has provided a valuable data base for medical and medico-legal purposes. However, patients generally do not appreciate the amount of information the dentist needs to know or are reluctant to volunteer certain medical information. Furthermore, experience in this dental practice has shown that communication between medical and dental practitioners is often inadequate, even when a patient is known to be attending both. Some medical practitioners may feel that confidentiality of patient records could be at risk from inter-professional consultations. In this practice a patient's consent is always sought before these consultations take place and no patient has so far refused. It may be that the risks to certain patients in dentistry are not clear to medical practitioners as there is little in medical training that highlights this. However, both dental and medical research have indicated the desirability of better communication between these professionals.[4,5,10] More contact between dentists and general practitioners could occur through postgraduate meetings and combined presentations at local clinical clubs to the benefit of both professions.

Most of the information obtained by the dentist was self-explanatory. However, some positive replies led to difficulties of interpretation. For the 61 patients with a cardiac murmur without further heart disease it could not be determined whether the murmur was pathological or innocent. Therefore, amoxycillin (3 g) was administered to all these patients as cover against a risk of endocarditis. Another difficulty was whether the 105 patients who considered they had a drug allergy had in fact true drug reactions, particularly the 54 patients with penicillin allergy. Some of these patients were also in the endocarditis risk category and for these patients the dentist prescribed erythromycin instead of penicillin. These precautions were medico-legally rather than medically necessary. It would be useful if patients with a true drug history were given a special medical card to state this. False positive medical histories have been noted before,[11] and when follow-up tests are performed, few true positive cases emerge.

A quarter of the questionnaires in this study contained errors, and 66 of these were important omissions. The fact that illiterate patients were excluded and the practice population was reasonably affluent means that the questionnaire itself could have been at fault. It has been observed that health questionnaires can mislead the public[11,12] and professionals.[13] However, this questionnaire had been used for many years in a university dental hospital, and was considered easy to comprehend.

There are further reasons why errors could have occurred. In this study the majority of patients either forgot facts or felt that they were irrelevant. Brady[2] also found that 32% of patients attending a hospital dental clinic gave invalid answers to a health questionnaire, and many patients who were ill considered themselves in good health from the point of view of the dentist. Recall of medication has been found to be particularly troublesome,[1] with many patients considering self-medication — for example with aspirin — as irrelevant. A small but important group deliberately concealed their problems from the dentist. This is well known in relation to hepatitis B and a history of drug abuse[14] but the three patients in this study did not fall into these categories. The woman taking antidepressant medication, which can seriously interact with dental anaesthetics, was embarrassed about her psychiatric history. Both the patient who had a myocardial infarction and the patient who had received irradiation were fearful that they would be denied dental treatment because of their medical histories. This fear was unfounded, but there could have been serious medical and medico-legal risks if their medical histories had remained unknown.

A good medical history is basic to the understanding of the patient's total health. Better integration of health information is needed in dentistry by routine collection of records. It is particularly recommended that more contact should occur between dental and medical practitioner groups. This would lead to better record linkage at the primary health care level and to benefits for all concerned.

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