

**“AN EXPLORATION OF POSSIBLE FACTORS AFFECTING THE ROLE OF
DENTISTS IN EARLY IDENTIFICATION AND INTERVENTION FOR
PEOPLE WITH AN EATING DISORDER”**

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Abstract

Eating Disorders are mental illnesses that can have serious physical consequences. The most common permanent damage resulting from an eating disorder is dental erosion. Most people with an eating disorder do not seek professional help. Dentists are well placed to detect and advise patients who present with dental erosion as a consequence of regular vomiting.

This study surveyed Gloucestershire Dentists regarding their experience of patients with eating disorders and their views on appropriate intervention. Factors that might affect the way Dentists deal with patients with eating disorders were explored. Dentists who expressed more confidence regarding their knowledge of eating disorders and regarding dealing with patients, detected more cases. No other factor significantly affected detection rates.

Overall, there was little consensus regarding the most appropriate form of intervention, suggesting that Dentists' knowledge of recommended clinical management strategies is limited. Many different factors appeared to influence the way Dentists' dealt with patients with eating disorders. Local training initiatives for Dentists could help to improve early identification and intervention for people with eating disorders.

Introduction

Anorexia Nervosa (AN) and Bulimia Nervosa (BN) and their atypical presentations are eating disorders defined in the International Classification of Diseases (World Health Organisation 1992). Although they are mental illnesses, both disorders can have serious physical consequences, including damage to oral health.

Numerous papers have reported the dental consequences and management of individual or very small numbers of patients [e.g. Barkmeier et al (1982), Miles et al (1985), Andrews (1982), Stege et al (1982), Brady (1980), Cowan et al (1991), House et al (1981), Wolcott et al (1984)]. Some larger studies have been undertaken, mostly uncontrolled [Hellstrom (1974), Roberts and Li (1987), Simmons et al (1986), Spigset (1991)], or more recently, controlled [Milosevic and Slade (1989) and Robb et al (1995)]. Most papers in the dental literature are general reviews of eating disorders and dental management (e.g. Miles et al 1985, Altshuler 1990, McComb 1993 and Burke et al 1996).

Although there is wide acceptance of the role of the Dentist in relation to early identification and intervention for people with eating disorders, little guidance is offered in the literature regarding this role. Only one study questions whether dentists understand their potential role and examines Dentists' knowledge of the dental consequences of eating disorders (Harwood and Newton 1995).

No study to date has explored factors other than knowledge, which might affect Dentists' behaviour in relation to patients with eating disorders. This study aims to explore the area of early identification and intervention in more detail, examining possible factors that might affect the way Dentists deal with patients with eating disorders.

Literature Review

Investigations into the dental consequences of eating disorders

Eating disorders have been recognised as an issue of relevance to Dentists since the 1930's (Bargen and Austin 1937). The first case series reported in the literature was Hellstrom's (1974) paper describing a series of patients with Anorexia Nervosa. Since then, several studies have established the oral effects of eating disorders (e.g. Roberts and Li 1987, Milosevic and Slade 1989, Spigset 1991 and Robb et al 1995). These effects are described in Table 1 below.

Table 1

| Oral Complication | Description | Cause |
|--|--|--|
| Perimolysis | Enamel erosion of the teeth, especially the palatal surfaces of maxillary and occlusal surfaces of posterior teeth | Exposure to acid from persistent vomiting |
| Loss of tooth height and raised amalgam fillings | As the enamel erodes, teeth can wear away and fillings can appear raised above the remaining tooth | Exposure to acid from persistent vomiting |
| Exposure of dentin | Following loss of covering layer of enamel | Exposure to acid from persistent vomiting |
| Dental hypersensitivity | Sensitivity to hot and cold | Exposure to acid from persistent vomiting |
| Pulpitis | Pain resulting from the exposure of the tooth pulp following enamel and dentin loss | Exposure to acid from persistent vomiting |
| Parotid enlargement | Harmless enlargement of the salivary glands | Exposure to acid from persistent vomiting |
| Xerostomia | Dry mouth | Vomiting, laxative abuse, poor fluid intake, anxiety |
| Orthodontic tooth movement | Open bite, front teeth no longer contact | Effect of using fingers to induce vomiting |

Damage to dental health is often the only permanent consequence of chronic self-induced vomiting. Vomiting is a feature of both BN and AN. About two thirds of people with BN and 40% of those with AN, regularly use vomiting as a method of weight control (Hsu 1990). The prevalence of vomiting amongst people with an atypical eating disorder is unknown. Frequency of vomiting varies from person to person and over time. Some studies have examined the effect of vomiting on teeth and have found that not all vomiters are affected and that the frequency of vomiting does not necessarily predict the degree of dental damage. Hellstrom (1977) and Hurst et al (1977) found higher levels of erosion amongst vomiters, but Roberts and Li (1987) found that only 35% of their 17 AN subjects and 33% of their 30 BN subjects demonstrated dental erosion.

In an uncontrolled study of 66 bulimics who all practiced self-induced vomiting, Simmons et al (1986) found that the presence or absence of tooth wear was related to duration of vomiting. The prevalence of erosion was twice as high amongst those who had vomited for more than 4 years.

Milosevic and Slade (1989) compared 58 people with an eating disorder with a control group of 50. Thirty-three of their sample of bulimics vomited regularly. They found no significant differences between the eating disorder group and normal controls on most of the dental variables they examined; however the vomiting bulimics had significantly higher levels of pathological tooth wear. They did not find any linear association between vomiting frequency, duration or total vomiting episodes and tooth wear.

Robb et al (1995) studied 122 eating disorder patients comparing them to an equal number of age, sex, and social class matched controls. The eating disorder patients were divided into subgroups according to diagnosis and use of vomiting. All the patient subgroups were found to have significantly more tooth wear, but again no relationship was found between frequency or duration of vomiting and tooth wear.

There is a lack of large controlled studies of vomiters within this area of research. Milosevic and Slade (1989) studied 33 vomiters and Robb et al (1995) studied 68. Both these studies rely on self-reporting of vomiting frequency and duration. Robb et al (1995) do not mention how this was assessed and Milosevic and Slade (1989) asked patients on one occasion only. Self reporting is probably the only realistic way to assess levels of vomiting, but self monitoring over time could provide a more accurate picture, although it would be subject to the Hawthorne Effect (Carter 1984). There have been no attempts to define an episode of vomiting, which leaves it open to interpretation and inaccuracy in reporting.

Milosevic and Slade (1997) did attempt to follow up their original sample, but only managed to include 20 of the original 58 patients and no controls. Unfortunately this study mixed new and follow up subjects and it is not possible to determine the results for the follow up vomiters. There is a need for a prospective controlled study to examine the effects of vomiting over time in a more rigorous manner.

There has been a general lack of consistency in the assessment tools used to measure variables, with some studies failing to use standardised measures for tooth wear. Eating disorder subjects are invariably drawn from patient groups and are likely to be unrepresentative of vomiters in the community, as about 90% of women with BN are not in contact with mental health services (Fairburn et al 1996). The protective effect of fluoridated water or the use of fluoride supplements has only occasionally been assessed and even then inadequately. For example, Milosevic and Slade (1997) did ask subjects whether they were born in an area of fluoridated water supply, but not whether they lived there throughout their childhood.

Similarly, oral hygiene practices have been assessed inconsistently and variable conclusions have been drawn. Simmons et al (1986) stated that 50% of their sample who brushed their teeth immediately after vomiting had evidence of erosion and suggested that this result lent some support to the view that immediate brushing damaged enamel. They did acknowledge that the case for immediate tooth brushing had not been disproved. This equivocal result does not really permit the drawing of any conclusions.

Milosevic and Slade (1997), found no differences in levels of erosion between those who brushed after vomiting and those who did not and went on to conclusively recommend that immediate brushing should be encouraged. However, their sample size was very small (9 who brushed within 1 minute and 8 within 5 minutes). Robb et al (1995) also found no difference in levels of erosion between those who brushed after vomiting and those who didn't. However, they failed to define "immediately" and do not report the numbers involved. It appears that there are likely to be a range of factors affecting the prevalence of dental erosion amongst people with an eating disorder, but chronic vomiting exposes people to increased risk of dental decay.

The relevance of early detection

Eating disorders tend to be chronic illnesses. The average point at which people with BN present to mental health services is 5 years after onset of eating problems (Johnson and Connors 1987). Arguments have been put forward for early detection and intervention as a way of reducing the chronicity and morbidity of eating disorders. Evidence from outcome studies that those people with AN who get treatment earlier do better, has been used to suggest that early intervention would be globally more effective (Eating Disorders Association 1995). However, a review of outcome studies for BN (Keel and Mitchell 1997), stated that although 4 studies found longer duration of illness at presentation to be a significant predictor of negative outcome, 3 studies found it to be insignificant.

Despite equivocal evidence in relation to outcome, the principles of health promotion logically apply to people with eating disorders. It seems reasonable to expect health professionals to be aware of potential health risks for people they have contact with and that they should offer appropriate advice and information regarding consequences and options for help with the problem. Secondary prevention of eating disorders (earlier detection and intervention) has been described by Fairburn (1995). He identifies numerous factors related to the person with the eating disorder that might impede help seeking behaviour. These include:

- The person not viewing their eating as a problem
- Hoping the problem will go away on its own
- Viewing the problem as not severe enough to warrant help or feeling undeserving of help
- Shame, guilt and secrecy
- Problems telling a doctor or other person
- Fear of treatment
- Financial barriers

Fairburn also recognises that ignorance and lack of confidence regarding eating disorders amongst professionals can impede effective identification and intervention. Some commentators have advocated the role of Dentists in early detection of people with an eating disorder [e.g. Robb et al (1995), Howatt et al (1990), Harwood and Newton (1995), Burke et al (1996)].

Given that not all people with an eating disorder vomit, and not all of those who do experience dental erosion, it would be unreasonable to expect Dentists to detect all people with an eating disorder who attend their surgery. There is also a lack of data regarding the numbers of people with an eating disorder who do attend their dental surgery compared to age, sex and social class controls. Robb et al (1995) comments that some of their eating disorder subjects had stopped visiting the dentist because of fears that the problem would be recognised. However, no data is presented.

Spigset (1991) surveyed 34 women with BN and found that only 2 had not seen a Dentist since developing their eating disorder. Thirty-two reported that they had visited a Dentist within the previous year. In 4 cases, the Dentist identified the eating disorder from examination of the teeth. Eight women informed their Dentist that they had an eating disorder, without being asked. Therefore 12 (38%) of the sample were known to their Dentist as having an eating disorder. These results are not generalisable given the small sample and the fact that the sample was collected from amongst women who had spontaneously written to a support organisation asking for information, suggesting that they were personally motivated to receive help.

Advice on dental management

Several authors have offered Dentists guidance on appropriate management of people with an eating disorder [e.g. Hazelton and Faine (1996), Miles et al (1985), Altshuler (1990), Burke et al (1996), McComb (1993)]. Hazelton and Faine (1996) provide fairly detailed advice including a “Treatment protocol” or decision tree that guides the Dentist to the most appropriate dental intervention based on whether the patient admits the problem, is actively vomiting, or is receiving psychiatric help. They illustrate their approach with two case examples and photographs of dental damage.

Burke et al (1996) review definitions, classification, prevalence, aetiology and dental evidence of eating disorders before reviewing dental management, which they divide into 5 areas:

- 1 Emergency care
- 2 Patient education
- 3 Pre-restorative care
- 4 Restorative care
- 5 Maintenance and review.

Altshuler (1990) also gives an overview of eating disorders including medical complications. She discusses the oral manifestations and then suggests ways in which a dentist could intervene. She divides intervention into 3 steps:

- 1 Assessment of the patient and the problem
- 2 Planning the intervention
- 3 Implementation of the plan.

Altshuler (1990) recommends undertaking a thorough health and dental history as well as oral examination. She suggests that consideration be given to who should raise the concerns with the patient and the manner in which a discussion takes place.

Miles et al (1985) list the diagnostic criteria for BN and the oral manifestations. They then use 3 case examples with photographs to illustrate the issues pertinent to the detection and dental management of BN. They conclude with a treatment outline involving:

- 1 Patient education
- 2 Dental treatment
- 3 Psychological “treatment”.

McComb (1993) thoroughly reviews the oral complications of AN and BN, illustrated with photographs and discusses the differential diagnoses. He divides the “**objectives of dental treatment for severely eroded dentition**” into 4 phases:

- 1 Stopping destruction caused by acid erosion and encouraging remineralization
- 2 Arresting occlusal attrition due to loss of enamel
- 3 Short term dental rehabilitation
- 4 Long-term rehabilitation.

The dental management of eating disorders is described below:

Table 2

| Dental management | Reference |
|--|--|
| Sympathetic, informative and non-judgmental approach, establish good rapport and trust | Burke et al (1996), Hazelton et al (1996), Altshuler (1990), McComb (1993), Miles et al (1985) |
| Questioning regarding possible causes of erosion | Altshuler (1990), McComb (1993), Miles et al (1985), Burke et al (1996) |
| Inform parents of suspicions if patient is a minor | Altshuler (1990) |
| Explanation of the dental consequences of the patient's vomiting | Hazelton et al (1996), Altshuler (1990), Burke et al (1996), Miles et al (1985) |
| Referral to other health professionals | Hazelton et al (1996), Altshuler (1990), Miles et al (1985), McComb (1993), Burke et al (1996) |
| Multi disciplinary team approach, or liaison between professionals | Hazelton et al (1996), Altshuler (1990), Burke et al (1996), McComb (1993) |
| Daily use of Fluoride mouth rinse | Hazelton et al (1996), Burke et al (1996), McComb (1993), Miles et al (1985) |
| Use of antacid mouth rinse after vomiting | Burke et al (1996), McComb (1993), Miles et al (1985) |
| Use of a magnesium hydroxide filled plastic splint for patients who continue to vomit despite psychiatric treatment | Burke et al (1996), McComb (1993), Miles et al (1985) |
| Avoid tooth brushing immediately after vomiting | Burke et al (1996), McComb (1993) |
| Nutrition education | Hazelton et al (1996), Miles et al (1985) |
| Delay restorative dental treatment until patient is receiving counselling | Hazelton et al (1996), Altshuler (1990), McComb (1993) |
| Commence dental treatment after consultation with mental health staff if it will improve self esteem and commitment to psychotherapy | Burke et al (1996) |

Although some reference is made in the literature [Abrams and Ruff (1986), Barkmeier et al (1982), Andrews (1982), Gross et al (1986), Altshuler (1990), Hazelton and Faine (1996), McComb (1993)] to the difficulties that patients with eating disorders can present (e.g. giving an incomplete history, denial, extreme sensitivity to criticism, emotional fragility), little guidance is offered as to how to manage these difficulties.

Barkmeier et al (1982) stress the importance of the Dentist having an understanding of the psychological problems underlying eating disorders. They recommend "**a forthright, understanding approach, since these patients do not respond well to criticism**". Gross et al (1986) suggest the

"Dentist or dental hygienist may express concern about the observed oral/physical conditions, question eating habits,

query the patient concerning stress or ask if the patient vomits....Clarification of frequency and reasons for vomiting, in addition to asking whether the patient has heard of anorexia or bulimia may provide an opportunity to discuss the problem".

Roberts and Li (1987) state

"The provision of a sympathetic, informative, and non-judgmental atmosphere by the health practitioner appears to be important for the successful treatment of patients with eating disorders.....The dentist can provide care by helping the patients feel more in control of their own health by instituting and adhering to an effective oral hygiene regimen".

McComb (1993) advocates that

"The dentist should adopt a more assumptive attitude during history taking - for example, 'How often are you troubled with vomiting?' 'How often do you take laxatives?' The tone during the history taking should be sympathetic and non-judgmental. The patient should not be badgered and must feel comfortable that confidences will be maintained, particularly if the patient is afraid of parental reproach. The dentist will probably not accomplish this immediately, and it may take months."

He advises seeking further clarification of any statement the patient makes in response to questions.

Miles et al (1985) suggest

"Bulimic behaviour, if suspected, might be elicited by a few indirect questions such as 1) 'Are you dieting?' 2) 'Do you have stomach complaints?' 3) 'Have you ever had problems keeping food down?'Evasive or obscure responses in the presence of clinical signs... should make the clinician highly suspicious of an eating disorder. If the practitioner then, in a non-judgmental way, informs the patient of the dental damage which has occurred.... the patient may admit their purging behaviour".

Burke et al (1996) suggest

"Rather than asking direct questions, the dentist should ask, in a kind, caring manner, leading questions related to the amount of food eaten and gastrointestinal problems. It is essential to make patients aware of their dental condition and to demonstrate this using a mirror or video camera".

Hazelton and Faine (1996) advise the use of two questions found by Freund et al (1993) to have a high sensitivity and specificity for diagnosing bulimia. **"The**

questions are, 'Are you satisfied with your eating patterns?' and 'Do you ever eat in secret?'. Other advice offered includes,

"The dentist may need to confront the patient about withholding relevant information.", "The patient must have the opportunity to discuss food fears in a supportive environment.", "If the dentist establishes a good rapport and trust, the patient may be willing to discuss the eating disorder after a few visits.", and "In consideration of the psychologic (sic) status of these patients, the dentist must be non-judgmental, yet have the patient thoroughly understand their responsibility for the success of any treatment rendered".

Only one paper examined in this literature review offers more detailed guidance. Altshuler (1990) pays the most attention to the practicalities of *how* dentists can intervene once they suspect their patient of having an eating disorder. She comments that

"Identification of an eating disorder patient in the dental office is similar to solving a mystery. Clues must be recognized and used to confirm suspicions prior to approaching a patient. Information to support suspicion may be obtained from appraisal of a patient's personality, physical appearance, health history, dental history, and dental examination".

Altshuler (1990) advises

"asking questions to ascertain the fear of weight gain and distortion of body image... (for example 'How do you feel about your body size? Do you think you are too thin or too fat?')".

Altshuler (1990) dedicates a whole section of her paper to guidance regarding intervention. She comments that

"...most dental professionals receive minimal training in intervention techniques, and may be reluctant to create a confrontational situation. Intervention takes time, planning, and empathy...".

Altshuler (1990) suggests that after gathering all relevant assessment information, intervention should be planned:

"Selection of the best possible person... to confront the patient is paramount for a successful intervention. The eating disorder patient is more likely to disclose the secret to someone who is able to establish rapport and a trusting relationship.... Interventions should be conducted in an area that provides complete privacy".

Altshuler (1990) goes on to suggest a question that can be used to initiate discussion,

"The findings from your health history and dental examination require a few follow-up questions. I assure you that your answers and our discussion will be held in strict confidence".

She advises that **"even a successful intervention may result in a temporary or permanent loss of the patient from the practice"**, but states that intervention should still be undertaken as without it, recovery cannot be initiated and deterioration in the patient's dental and physical health might continue.

Altshuler (1990) continues by offering guidance regarding further questioning.

"A nonjudgmental, direct approach is recommended where concrete examples of associated pathoses are provided and scare tactics avoided. Placing the patient on the defensive will only result in denial. Questions that provide the patient with an excuse (for example, 'Do you eat a lot of acidic foods or lemons?')... should be avoided..."

Altshuler (1990) says,

"Often, asking a direct question while maintaining eye contact is effective (for example 'The erosion on your teeth is the result of chronic exposure to an acid. Have you heard of bulimia? Do you have an eating disorder?'). Direct questions force a yes or no response, and offer no clues to patients who are unsure how much their teeth and soft tissues are betraying their disordered behaviour".

Altshuler (1990) continues by adding

"After the initial confrontation, the dental hygienist should expect any of the following patient responses: denial, anger, or tears. The emotional outburst that frequently accompanies intervention is not directed at the intervening practitioner but may be a response to being found out and the shame that occurs with recognition of the eating disorder".

Although there is general consensus regarding the dental aspects of management, there is little guidance in the dental literature relating to the practical approaches that can lead to successfully engaging a patient with an eating disorder in the process of acknowledgment and treatment of their problem. Basic strategies are described, but offer little preparation for dental staff to intervene in such a sensitive area. All the advice offered is anecdotal and differing early interventions have never been systematically evaluated.

A survey of dentists' knowledge

The only survey of Dentists relating to eating disorders (Harwood and Newton 1995), asked Dentists in Kent about their knowledge of the oral signs of BN and approaches

to treatment planning. The investigators asked Dentists registered with “Dentaline” emergency dental service to complete the questionnaire. About half of the 600 Dentists in Kent are registered with “Dentaline”. Dental service managers were briefed and asked to encourage Dentists to complete the questionnaire at the end of an emergency dental surgery. Data was collected for 6 months.

Dentists were given a general description of BN and asked to pick which oral signs on a list were typical of BN, by stating one of the following:

- Don't know
- Probable sign
- Possible sign
- Not likely to be a sign.

The list contained equal numbers of accurate and inaccurate signs. Dentists were then asked how soon after the onset of BN they would expect oral signs to become apparent. They were asked what steps they would take if a patient told them they had BN, and they were also asked if they had treated a patient with BN and what treatment they undertook.

One hundred questionnaires were returned (33% response rate). Twenty-nine respondents reported having treated a patient with BN. All respondents correctly identified enamel erosion as a likely sign of BN and only 3 said that dentine hypersensitivity was not likely to be a sign. Thirty-nine respondents incorrectly stated dry mouth was not likely to be a sign, as did 26 for parotid gland enlargement and 32 parotid dysfunction. Aphthous ulceration (mouth ulcers), lingual keratosis (white patches on tongue), cold sores, gum disease and geographical tongue (smooth red patches on tongue of variable position and shape) were correctly identified as not likely to be a sign by 27, 36, 68, 61 and 65 respondents respectively. The authors conclude, **“The overall knowledge regarding the oral signs of bulimia was very low” (Harwood and Newton 1995).**

The most frequently mentioned component of the treatment plan was referral to the patient's GP (53%). Other sources of help were mentioned, 11 respondents suggesting direct access to mental health services and 14 suggesting alternatives such as “counselling”, “contact Bulimia Association” or counselling by the Dentist. Twenty-one respondents restricted their management to dental aspects only. The dental treatment plans varied, **“but most contained the common themes of oral hygiene advice and application of fluoride in one form or another” (Harwood and Newton 1995).** The authors do not report data relating to dental treatment plans or the results of respondents' views on how long after the onset of BN oral signs would become visible.

Harwood and Newton (1995) argue that

“The dental profession will only be of value (in the early identification of BN) if three conditions are fulfilled.

1 The bulimic patient attends a dentist on a regular basis during the

period of the eating disorder.

2 The dentist recognizes the significance of the combination of oral signs and symptoms that make bulimia nervosa a likely diagnosis and is aware of the importance of onward referral rather than limiting management to the oral problem.

3 There is a recognized channel of communication between general dental practitioner and the mental health services concerned with the management of eating disorders”.

Harwood and Newton's (1995) study is the only attempt so far to measure the level of knowledge in relation to BN amongst Dentists. As such it is not necessarily representative of all Dentists, especially as the response rate was 33%, despite efforts at the design stage to improve on the usual poor response to postal questionnaires. Reliance on a third party (dental service managers) failed to increase the response rate, probably due to interest in the project waning over the 6-month data collection period. However, there is little reason to suppose that knowledge is any better elsewhere. The study needs to be replicated to establish whether the results are representative.

The design of the question relating to oral signs allowed respondents to choose between accurate and inaccurate answers. It would have been interesting to know what answers respondents would have spontaneously produced, if not prompted. However, analysis of the data was easier because responses did not have to be coded prior to analysis. The absence of data relating to dental treatment plans and estimates of the time between onset of BN and evidence of oral problems rule out comparison with other surveys at a later date.

Harwood and Newton's (1995) study explored the level of knowledge of Dentist in relation to BN, recognizing that awareness of a potential problem is an essential prerequisite to intervention. They found that respondents generally had a poor knowledge of the oral effects of BN and were not always sure how to proceed with intervention after identifying a problem. They recommended that:

1 “Dentists should be made more aware of their role in the early identification of bulimics. This could be achieved through the existing channels for continuing professional education.

2 Dentists should be advised that the patient's GP is the appropriate person for referrals of suspected bulimics”.

Rationale for this study

Although attention has been paid to eating disorders in the Dental literature for many years, Harwood and Newton's (1995) study suggests that many Dentists are unaware of their potential role in early identification and intervention for people with eating disorders. Most of the Dental literature offers advice on management that pays little

attention to the complex interpersonal difficulties that patients can present.

This survey attempts to build on Harwood and Newton's (1995) work by exploring further the possible influences that might affect Dentists' behaviour in relation to identification and intervention for patients with eating disorders. An increased understanding some of the difficulties Dentists experience could positively influence the design of local training initiatives.

Methodology

The Research question

“What factors influence dentists' provision of health education to people with an eating disorder.”

This project had two main aims. Firstly to identify some of the factors that influence dentists' detection of people with an eating disorder. Dentists can only provide an appropriate intervention if they detect the problem. Secondly, to begin to develop an understanding of factors that influence dentists' behaviour in relation to providing health education to patients they consider might have an eating disorder. There could be many reasons why a Dentist might not offer an appropriate intervention even if they suspect the patient has an eating disorder.

The research design for this project was non-experimental combining quantitative and qualitative research methods (Sapsford and Abbott 1992). A postal survey was selected as a useful way to begin to explore the research question. Surveys can give a broad picture of a topic, potentially identifying areas of interest for further research. Fink (1995) describes a survey as **“...a system for collecting information to describe, compare, or explain knowledge, attitudes, and behaviour.”**

A survey was chosen because there was a defined total population and a previous survey in Britain (Harwood and Newton 1995) had begun to examine the experience of Dentists with patients with eating disorders. A confidential and anonymous survey allowed the examination of a cross section (Fink 1995) of experience amongst Dentists in Gloucestershire. There might have been reluctance amongst some Dentists to participate in interviews relating to a topic of which they had little knowledge. An anonymous survey allowed Dentists with all levels of knowledge and interest to respond, thereby hopefully minimising bias in the results.

Surveys offer advantages and disadvantages to this sort of research. Hakim (1987) states some of the advantages as:

- 1 “...the production of descriptive statistics that are representative ... of the whole study population...”**
- 2 “...surveys also allow associations between factors to be mapped and measured.”**

3 “...studies can be readily repeated...”

4 “...its *transparency or accountability*... the methods and procedures used can be made visible and accessible to other parties...”

Hakim (1987) suggests that the “**principal weakness of the sample survey is that it normally involves the use of a structured questionnaire... which necessarily obtains a lesser depth and quality of information than a depth interview**”. Questions are open to misinterpretation and no follow up or clarification of answers is possible. Standardised questions pre-define the responses available to respondents, thereby potentially limiting the richness of the data. Open questions allow respondents the opportunity to expand their response, permitting the introduction of themes by the respondent (Bailey 1991). A combination of closed and open questions was chosen to keep the length of time required to complete the questionnaire to a minimum, but to provide respondents with the opportunity to offer their own responses un-prompted by the questionnaire.

The sample was the total population of non-salaried General Dental Practitioners registered with Gloucestershire Health Authority in August 1998 (214). The decision was made to survey the total population rather than a randomly selected sample, as this would provide a large enough sample to undertake some statistical tests assuming a response rate of approximately one third.

A questionnaire (Barker 1991) was designed for the purpose of this study (see Appendix 1). Initial demographic data (sex, age, years qualified, location of practice) was included so that any differences between groups could be examined (Carter 1991). The location of the practice was considered potentially important because Hoek et al (1995) found that the incidence of BN in primary care was significantly higher in urban areas as opposed to rural areas. As BN is a relatively new mental illness, there was the possibility that more recently qualified Dentists might identify cases more frequently. Also, female Dentists might be more aware of eating disorders because women are far more likely to develop eating disorders (Beumont 1995).

Training and knowledge from reading were considered important factors that might affect detection rates and are also indicators of the level of expertise Dentists hold in this area. Similarly, levels of confidence might affect Dentists’ willingness to identify and tackle the problem directly. As each of these areas of inquiry had been identified by the investigator, closed questions were chosen as the most appropriate way to elicit information from respondents (Barker 1991). Potential responses were categorised and respondents were asked to tick boxes as appropriate.

Dentists were asked how many patients with an eating disorder they had ever seen so that the overall experience of respondents in this area could be considered. However, as respondents were likely to have seen differing numbers of patients, largely due to differences in the length of time they had been qualified, they were also asked to report the number of patients seen in the last six months, so that groups could be compared. The final three questions were open questions relating to the respondent's individual knowledge, experience and views of their role in treating patients with an eating disorder. These questions were included, so that respondents could generate data un-

prompted by the investigator (Sapsford and Abbott 1992).

Qualitative data was examined and categories were produced so that it could be coded. The posteriori method was used, as described in Bailey (1991), who quotes Schwartzberg's definition: "**the categories of analysis are extracted from the material itself rather than being based upon a previously defined and outlined 'schematic system'**". The coding technique used was concept coding (Bailey 1991).

The questionnaire was pilot tested on a group of salaried NHS Dentists who were not part of the final survey. They represented a similar professional group that was discrete and separate from the target population. Pilot questionnaires were completed in a group setting, following a description of the aims of the study. Discussion followed which produced several suggested improvements to the design of the questionnaire. The data produced was analysed to establish whether there were any further problems with the design. No formal testing of reliability or validity was undertaken (Fink 1995). The Director of Dental Public Health and the Secretary of the Local Dental Advisory Committee were informed of the study and asked to comment on the design of the questionnaire.

Formal ethical approval was not required, because no contact with patients or patient details was being requested (Schröck 1991). However, Dentists were informed in a letter accompanying the questionnaire, that their response would be anonymous and kept strictly confidential (Appendix 2). The letter detailed the aims of the study and explained how data would be stored, stating that it would be subject to the provisions of the Data Protection Act. Dentists were encouraged to respond within two weeks of receipt of the questionnaire and a business reply envelope was included. Details were given regarding the local relevance of the outcome of the study and its potential use for training purposes, thereby encouraging the best possible response rate (Kaner et al 1998).

The questionnaire was mailed direct to each individual Dentist via the Gloucestershire Health Authority Dental mailing system. A postal survey ensured anonymity and was considered the most practical way of undertaking the study given the large sample and the lack of evidence of improved response rate from Dentists participating in a previous survey, where questionnaires had been given to Dentists at the end of emergency surgeries (Harwood and Newton 1995).

The data was stored and analysed on Microsoft Excel apart from non-parametric tests, which were conducted using SPSS.

Results

There were 214 Dentists on the Gloucestershire Health Authority Dental List in August 1998. Sixty one (28.5%) were female and 153 (71.5%) male. Eighty-two (38.3%) returned the questionnaire. Twenty-nine (35.4%) were female and 53 (64.6%) male.

The respondents fell into the following age groups:

Table 3

| Age | n | % |
|-----------------|----------|----------|
| Up to 30 | 10 | 12.2% |
| 31 - 40 | 31 | 37.8% |
| 41 - 50 | 24 | 29.2% |
| 51 - 65 | 17 | 20.7% |

Respondents had been qualified as a Dentist between 1 and 34 years. The mean number of years since qualification was 17.2. The median was 18 years, the mode 20 years and the standard deviation was 8.677 years.

Respondent's dental practices were situated in the following areas:

Table 4

| Area | n | % |
|--|----------|----------|
| Village | 14 | 17% |
| Town | 32 | 39% |
| Urban area (Cheltenham or Gloucester) | 36 | 44% |

Sixty-four (78%) respondents reported having seen at least 1 patient with an eating disorder (suspected or confirmed) since qualifying. Two (2.4%) reported that they had not seen any patients and 16 (19.5%) did not answer that question. The number of patients ever seen ranged from 0 - 30 with a mean of 8.1. The median was 6 patients, the mode 10 and the standard deviation 7.091. One respondent reported seeing over 500 patients since qualifying. This response was not included in the analysis as it was extremely different from all the other responses.

Fifty-one (62.2%) respondents reported having seen at least 1 patient with an eating disorder (suspected or confirmed) within the previous 6 months. Twenty-four (29.2%) reported that they had not seen any patients during this time period and 7 (8.5%) did not answer the question. The number of patients seen within the last 6 months ranged from 0 - 6. One respondent reported seeing 50 patients, but this response was excluded from the analysis again because of its extreme difference from other responses. The mean number of patients seen during the previous 6 months was 1.3. The median was 1, the mode 0 and the standard deviation was 1.308.

Forty (48.8%) respondents stated that they had received some training regarding eating disorders. Forty-two (51.2%) had never received any training.

Of those who had received training, 16 (40%) said it was only during their dental training, 8 (20%) said it was only since qualifying and 16 (40%) said they had received training before and after qualifying.

Twenty-two (55%) had received training regarding the dental health aspects of eating disorders only. One (2.5%) had only received training on mental health issues. Seventeen (42.5%) had received training regarding dental and mental health issues. The amount of training received was as follows:

Table 5

| Amount of training | n | % |
|---------------------------|----------|----------|
| Less than 1 hour | 6 | 15% |
| Below 2 hours | 16 | 40% |
| Below 4 hours | 12 | 30% |
| Below 7 hours | 4 | 10% |
| More than 1 day | 2 | 5% |

Dentists were asked how much reading they had undertaken regarding the dental aspects of eating disorders. The responses were as follows [3 (3.6%) respondents did not answer the question]:

Table 6

| Amount of reading | n | % |
|--|----------|----------|
| None | 7 | 8.5% |
| Dental textbook only | 25 | 30.5% |
| Dental textbook plus 1 or 2 research or review papers | 30 | 36.5% |
| Dental textbook plus 3 - 9 research or review papers | 13 | 15.8% |
| Dental textbook plus 10 or more research or review papers | 4 | 4.8% |

Dentists were asked to rate their own level of confidence regarding their knowledge of eating disorders, apart from the dental consequences. The following responses were recorded on a 5 point Likert scale where 1 represented “unconfident” and 5 “very confident”:

Table 7

| Level of confidence regarding knowledge of eating disorders | n | % |
|--|----------|----------|
| 1 Unconfident | 11 | 13.4% |
| 2 | 29 | 35.3% |
| 3 Moderately confident | 36 | 43.9% |
| 4 | 5 | 6.1% |
| 5 Very confident | 1 | 1.2% |

Dentists were then asked to rate their level of confidence regarding dealing with patients with eating disorders, apart from the dental treatment. The same 5 point Likert scale was used and produced the following results [4 (4.9%) respondents did not answer the question]:

Table 8

| Level of confidence regarding dealing with patients with eating disorders | n | % |
|--|----------|----------|
| 1 Unconfident | 14 | 17% |
| 2 | 29 | 35.4% |
| 3 Moderately confident | 31 | 37.8% |
| 4 | 4 | 4.9% |
| 5 Very confident | 0 | 0% |

Data for the number of patients seen within the last 6 months was analysed comparing different groups of respondents. Two different tests were used to compare the non-parametric data (Reid and Boore 1987). The Mann Whitney U Test was used where there was two groups and the Kruskal-Wallis Test where there were three groups. Comparisons were made between the following categories of respondents:

Male *or* Female

Age up to 40 *or* 41 and above

Up to 18 years since qualification *or* over 19 years since qualification

Village practice *or* Town practice *or* Urban practice

Received training *or* not received training

Below 2 hours training received *or* above 2 hours

Small amount of reading undertaken *or* medium amount *or* large amount

Less confident of knowledge *or* more confident

Less confident regarding dealing with patients *or* more confident.

No significant differences in the detection rates of patients with eating disorders were found between any of these groups except levels of confidence. Respondents who were more confident (3 or above on the Likert scale) of their *knowledge* of eating disorders detected significantly more patients ($P=.03$), as did respondents who were more confident (3 or above on the Likert scale) regarding *dealing* with patients ($P=.05$). Although statistically significant, the numbers of patients identified in each group were low. On average, respondents who were more confident could be expected to identify three patients per year as opposed to two.

Dentists were then asked 3 open questions. The first question asked what measures would be appropriate for a dentist to take if they suspected that a patient had an eating disorder? The responses were coded and produced 16 different categories. One category received 3 responses and 7 received only 1 response. These categories were “**Depends on circumstances**” [3 (3.6%)], “**Don’t know**”, “**Fear of alienating the patient**”, “**Referral for specialist dental treatment**”, “**Patient already treated**”, “**Take a full history**”, “**The patient will have to admit it**” and “**Wait until the patient’s eating disorder is treated**”. The first 8 categories are presented below:

Table 9

| Appropriate measures | n | % |
|--|----------|----------|
| Referral to G.P. | 50 | 60.9% |
| Discussion of problem | 31 | 37.8% |
| Dental advice | 19 | 23.1% |
| Education regarding dental consequences | 19 | 23.1% |
| Consult parent | 14 | 17% |
| Dental management | 12 | 14.6% |
| Dietary analysis | 6 | 7.3% |
| Dietary advice | 6 | 7.3% |

Referral to GP

The majority [50 (60.9%)] of respondents thought that referral to the patient’s General

Medical Practitioner was an appropriate measure for a Dentist to take. Examples of the responses were:

“Discuss with patient’s G.P.”

“Consult doctor for counselling”

“Discrete discussion with family and/or medical practitioner”

“Alert doctor (if appropriate)”

“Advise them to seek help from an appropriate source - their physician in the first instance”

Discussion of problem

There was less consensus regarding further measures. Over one third [31 (37.8%)] of respondents suggested that the dentist’s concerns should be raised with the patient, but there was wide variation in the suggested way to do this. Examples of responses were:

“Tell patient and discuss”

“To discuss the dental problems that have been diagnosed, to try and get the patient to recognise there might be a problem”

“They know they have a problem - they just have to admit it. Questions as to diet will rule out the causes of erosion. Then a medical/mental cause must be considered. You must get them to admit it or allow you to speak to their G.P.”

“Make patient aware of dental signs, suggest cause, await response, establish awareness that further advice is being sought”

“Ask - see if patient admits to having a problem”

“Establish that there is a disorder”

“Fairly subtle but probing questioning of the aetiology of the dental signs and symptoms”

Dental advice

Less than a quarter [19 (23.1%)] of respondents suggested that dental advice was an appropriate measure. The examples of advice varied from the specific to the general. e.g.

“Oral hygiene advice”

“Advice on reducing damage effects on dental tissue”

“Try and maintain regular reviews of dental health and offer appropriate dental advice. Be aware that there are usually complicated personal factors causing eating disorders which will affect their appreciation of dentists advice”

“Dental preventative measures - advice on oral hygiene, fluoride, diet, soft brush”

“Oral hygiene instruction”

“Oral hygiene advice, especially if bulimic, fluoride mouthwash, etc. More regular check ups”

“If patient unwilling to alter habit (e.g. bulimia) advise use of milk of magnesia in gum shield prior to vomiting”

Education regarding dental consequences

The same proportion [19 (23.1%)] of respondents suggested educating the patient regarding the dental consequences of eating disorders. Examples of responses were:

- “Show what harm may be occurring to the dentition”**
- “Warn of dangers to teeth and oral mucous”**
- “Advice regarding acid regurgitation on enamel”**
- “Try to explain to the patient the particular dangers to the patient’s teeth caused by the eating disorder”**
- “Discuss dental problems regarding eating disorder”**

Consult parent

Less than a fifth [14 (17%)] of respondents suggested consulting the patient’s parent if they were a young person. For example:

- “Speak to parent if child”**
- “Discuss with parent if young adult”**
- “All my patients are adolescent: discuss suspicions with parents: 1) ask if they have noticed any eating abnormalities, vomiting, etc. 2) What steps have they taken”**
- “If under 16 inform parent and emphasise you have suspicions”**

Dental management

Twelve (14.6%) respondents suggested that dental management was an appropriate measure to take. Examples of responses were:

- “Denture construction if poor occlusion”**
- “Ongoing treatment for pain relief. stabilisation with temporary restorations”**
- “Protect and repair remaining tooth tissue”**
- “Dental management - monitor tooth substance loss, etc.”**

Dietary analysis

Less than a tenth [6 (7.3%)] of respondents suggested an analysis of dietary intake was appropriate, e.g.

- “Diet analysis sheet to be given to patient covering 3 separate days”**
- “Try to approximate the intake of minerals, vitamins, carbohydrates, proteins and try to compare that to what is needed for the patient”**
- “Dietary analysis, e.g. citrus fruit, carbonated drinks, etc.”**
- “Diet investigation including timing”**

Dietary advice

The same number [6 (7.3%)] thought that dietary advice was required. For example:

- “Institute dietary advice”**

“Dietary advice (with caution) regarding excessive intake of fruit/fizzy drinks emphasising dental effects”

The second open question asked Dentists if they had knowingly seen a patient with an eating disorder, what measures they had actually taken? Nineteen separate categories were identified following coding of the data. Two categories received 2 (2.4%) responses and 9 received only 1 response. These categories were **“Dietary analysis”**, **“None”** (2), **“The patient was OK now”** **“Only suspected”**, **“Broached the possibility of making a polythene splint to protect teeth when vomiting”**, **“For the second patient I altered my treatment to avoid use of removable appliances as they had been used previously as an excuse for not eating”**, **“Consultation with Social Workers etc.”**, **“Follow up with regular reviews”**, **“Unable to get patient to admit problem”**, **“Only if patient interested”** and **“Referral to teaching hospital”** (1 response each).

The remaining 8 categories are presented below:

Table 10

| Measure taken | n | % |
|--|----------|----------|
| Dental advice | 25 | 30.5% |
| Referral to G.P. | 22 | 26.8% |
| Dental management | 20 | 24.4% |
| Discussion of problem | 18 | 21.9% |
| Education regarding dental consequences | 15 | 18.3% |
| Dietary advice | 10 | 12.2% |
| Consult parent | 7 | 8.5% |
| Already treated | 6 | 7.3% |

Dental advice

Less than a third of respondents [25 (30.5%)] confirmed that they had given dental advice to a patient with an eating disorder. Examples of responses are as follows:

“Oral hygiene issues, mouthwashes”

“Advice as fully as possible on the type and prevention of damage to the teeth by tooth brushing after an acid regurgitation for example”

“Recommend Bicarb toothpaste, FLK mouth wash, non rinsing after brushing. Gellkam (High Fl) at night etc.”

“Rigorous oral hygiene instruction”

“Advice on reducing damage effects on dental tissue”

Referral to GP

Just over a quarter [22 (26.8%)] of respondents stated that they had suggested referral of the person to their G.P. For example:

“Tried to refer patient to their GP for further counselling”

“Always inform GP of suspicions”

“Recommendations to seek psychiatric help via GP referral”

“Liaised with GP”

Dental management

About a quarter [20 (24.4%)] of respondents stated that they had undertaken dental management. For example:

“Restoration of eroded surfaces”

“Treatment of hypersensitive teeth”

“Treat dental aspects of the condition”

“Monitor hard tissue loss”

Reconstruction of teeth once problem is overcome”

“Ongoing treatment for pain relief. Stabilisation with temporary restoration”

Discussion of problem

Eighteen (21.9%) respondents mentioned that they had discussed the problem with the patient. For example:

“Discuss evidence with the patient”

“Discuss - e.g. do you ever drink juices, stomach upset, etc. Have you ever had Anorexia?”

“Suspected patients questioned carefully”

“On at least 2 occasions I have been able to tell patient that I know they are bulimic (from acid erosion) and they have opened up and we have been able to advise them”

“Asked in a round about way questions of diet, etc.”

Education regarding dental consequences

Just under a fifth [15 (18.3%)] of respondents stated that they had provided education regarding the dental consequences of vomiting. Examples of responses are:

“Discussion regarding the increase in acid in the mouth and discussion with patient about the prognosis of the dentition”

“Advise patient that their condition is affecting their teeth and that they may be able to get some help”

“I have given advice on the effects of acid on the enamel and dentine”

“Make patient aware of dental signs, suggest cause”

“Information regarding damage to dental tissues”

Dietary advice

Ten (12.2%) respondents had given dietary advice to patients with an eating disorder. For example:

“Diet is discussed and advice given verbally and written”

“Dietary counselling”

“Dietary advice”

Consult parent

Seven (8.5%) respondents mentioned that they had consulted the patient’s parent, e.g.

“Contact parents with recommendations to seek psychiatric help via GP referral”

“Spoke to parents”

“Discuss with parent if young adult”

Already being treated

Six (7.3%) respondents said that the patient was already being treated for their eating disorder when they met them, e.g.

“I have never had to deal with this as all of my patients have already been seeking treatment”

“Disorder known to other professionals and being treated”

The final open question asked Dentists what factors might influence how they dealt with a patient with an eating disorder? Twenty-eight categories were identified following coding of the data. There was a wide range of answers with 6 categories receiving 2(2.4%) responses each and 10 categories receiving only 1 response. These categories were, **“Patient’s attitude to dental health”, “Sex”, “Confident diagnosis”, “Problem resolved”, “Weight” and “Involvement of family”** [2 responses each]. **“Psychological state”, “Education”, “Length of illness”, “Medical history”, “Don’t know”, “Usual treatment”, “Wary of involvement”, “Economic”, “Nature of disorder” and “Cause”** [1 response each].

The remaining categories are presented below:

Table 11

| Influencing factor | n | % |
|--|----------|----------|
| Acknowledgement of the problem | 34 | 41.4% |
| Age of patient | 15 | 18.3% |
| Severity of dental problem | 13 | 15.8% |
| Concurrent treatment | 11 | 13.4% |
| Relationship with patient | 9 | 10.9% |
| Need for specialist dental referral | 3 | 3.6% |
| Dentist’s knowledge | 3 | 3.6% |
| Family issues | 3 | 3.6% |
| General health | 3 | 3.6% |
| Attendance record | 3 | 3.6% |
| Time available | 3 | 3.6% |
| Social factors | 3 | 3.6% |

Acknowledgement of the problem

Overwhelmingly, respondents to this question thought that the patient's willingness to acknowledge the problem was a factor influencing how they dealt with a patient with an eating disorder. However, less than half of the sample [34 (41.4%)] mentioned this factor. Examples of responses in this category were:

“Patient’s co-operation - acceptance of cause/problems - willingness to help themselves”

“Only if patient is willing to discuss the disorder with me”

“If after initial enquires the patient was very reticent at discussing the problem, I would find it difficult to pursue the matter”

“Attitude to health, to self, level of truth, motivation”

“The patient themselves and their approach to the condition”

“Possibility patient might deny problems and subsequently not attend, might mean not confronting patient immediately”

“Does patient want treatment. Is patient denying eating disorder”

“The patient’s opinion on whether they have a problem or not. Patient motivation”

Age of patient

Fifteen (18.3%) respondents mentioned the age of the patient, but no reference was made to why this was an issue.

Severity of dental problem

Thirteen (15.8 %) respondents suggested that the severity of the dental problem was a factor. Examples of responses were:

“Stage of hard tissue damage”

“The severity of the problem - very severe erosion damage to teeth”

“Dental treatment needs. Level of acid erosion”

“Extent of damage”

“How much dental disease already present”

Concurrent treatment

Eleven (13.4%) respondents considered it important whether the patient was receiving concurrent treatment for their eating disorder. For example:

“Involvement of other professionals”

“Whether receiving treatment/counselling, i.e. timing of orthodontic treatment is important and could create additional psychological problems or alternatively solve/assist solution of perception of attractiveness in conjunction with psychiatric treatment”

“Current therapies, self-help programmes, etc”

“If I worked in tandem with a psychologist/psychiatrist to fill me in on the clinical aspects of the case”

“Whether they are already being treated for the disorder”

Relationship with patient

Nine (10.9%) respondents mentioned the relationship with the patient. For example:

“Quality of dental-patient relationship”

“How well you know them and for how long”

“How well I know them”

“Relationship I can develop between patient to allow free discussion of any disorder”

Need for specialist dental referral

Three (3.6%) respondents suggested that they would consider whether there was a need for a specialist dental referral as being a factor, e.g.

“Am I able to deal with destruction or will I need to refer”

“Severely anxious patient refer to hospital. Medical contra indications would also need referral to hospital”

Dentist’s knowledge

Appropriate knowledge was a factor thought important by 3 (3.6%) respondents. e.g.

“A better understanding and appropriate handling of situation. Knowledge of the correct procedure to follow > the most suitable people to refer to”

“Production of a guideline and where to refer patient”

Family issues

Three (3.6%) respondents referred to the patient’s family issues. e.g.

“Current family background and circumstances”.

General health

Three (3.6%) respondents suggested that the patient’s general health was a factor, but did not explain why.

Attendance record

The patient’s attendance record was mentioned by 3 (3.6%) respondents e.g.

“If they were regular attendees I would feel happier discussing problem, if new or irregular attendees I would suggest seeing GP - but possibly not mention eating disorders - just that there is a dental problem from another cause”

Time available

Three (3.6%) respondents thought that the amount of time available was important.

Social factors

Social factors were mentioned by 3 (3.6%) respondents, but again no specific references to individual factors were mentioned.

Discussion

The 38.3% response rate to the questionnaire was fairly typical for this sort of survey (Bailey 1991). Harwood and Newton (1995) received 33% response in their survey of Dentists in Kent. Proportionately more female than male Dentists returned the Gloucestershire questionnaire, perhaps reflecting more interest in the topic amongst female Dentists. Eating disorders overwhelmingly affect women more than men with 90-95% of sufferers being female (Beumont 1995).

Sixty-four (78%) Dentists reported having treated a patient with an eating disorder. Harwood and Newton (1995) found only 29% of their sample had done so. It is not possible to say whether this is a real difference in detection rates between samples. Harwood and Newton (1995) collected data directly from Dentists at the end of surgery, so their sample might have contained more Dentists with no experience of eating disorders.

The Gloucestershire sample might have attracted a higher response rate from Dentists who had treated a patient and were therefore more motivated to return the questionnaire. The very low number of Dentists who reported having not seen a patient suggests this might be the case.

The reported number of patients seen is likely to be fairly inaccurate as it relies on memory over a long period of time. However, it gives a rough idea of the numbers involved and confirms that Dentists in this sample have come across eating disorders infrequently. When Dentists were asked how many patients with an eating disorder they had seen within the last 6 months, nearly 2 thirds (51) reported having seen at least 1 patient and just under a third (24) stated they had not seen any patients in this time period. This data is more likely to be closer to the true numbers seen given the relatively short time period that Dentists were asked to recall and is probably fairly accurate as the range is small suggesting that most respondents have a similar experience.

Despite comparisons using several different variables, only two significant differences were found between any groups for their detection rates of patients with eating disorders (*confidence of knowledge* and *confidence regarding dealing with patients*). These results suggest that possibly more general factors affect detection rates, such as the number of people with eating disorders actually attending dental surgeries.

Another explanation could be that although there were differences in responses from Dentists, most of the differences were not big enough to achieve statistical

significance. For example, the average number of patients detected in the last six months was higher in the group who had received training (1.57 versus 1.12). Also, the same results were lowest amongst the group who had read little (1.24), higher when more had been read (1.41) and highest in the group who had read most (1.57). It could be argued that levels of confidence are the accumulative effect of training, reading and experience. These results suggest that there is a trend towards greater rates of detection by Dentists who are more confident regarding eating disorders, but the evidence is not strong.

Just under half the sample had received any training regarding eating disorders and 55% of those respondents had received less than 2 hours training. Only 24 respondents said they had received any training since qualifying. Bulimia Nervosa was first described in 1979 (Russell 1979) and reports of the dental effects began to appear in the literature during the early 1980's. Forty-one (50%) respondents have been qualified as Dentists for more than 19 years and only 14 of them had received training. This suggests that Dentists who qualified before the 1980's have largely had to rely on published literature for guidance on managing eating disorders.

Seven (8.5%) of the sample had not read anything about eating disorders and almost a third (30.5%) had only read about eating disorders in a dental text book. This suggests a relatively low level of knowledge regarding eating disorders which is perhaps reflected in the levels of confidence that respondents felt regarding their *knowledge* of eating disorders (48.7% felt less than moderately confident). These levels of confidence were also reflected in the results for confidence in *dealing* with patients with eating disorders (52.4% felt less than moderately confident).

Overall, these results suggest that about half of the dentists who responded feel ill prepared to deal with the specific problems that patients with eating disorders can present.

There was a wide range of response to the open question regarding appropriate measures for a dentist to take with someone with an eating disorder. 60.9% thought that referral to the patient's GP was appropriate. Harwood and Newton (1995) found that 53% of their sample stated they would contact the patient's GP. In their survey, respondents made more reference to other sources of help (e.g. psychiatric services or voluntary counselling agencies) and only 21% restricted suggested help to dental management only.

Consensus slipped away to only just over a third (37.8%) of respondents agreeing that they should discuss the problem with the patient and less than a quarter suggesting dental advice or education regarding dental consequences (23.1% each). Although a survey cannot accurately reflect the behaviour of respondents due to potential bias towards reporting "best practice", inaccurate recall of events and other environmental influences, this question tested dentists' knowledge of appropriate clinical management. The results suggest that although individual respondents might have considered a range of interventions, most appeared unaware of the full range of interventions advised by dental experts (e.g. Burke et al 1996, Altshuler 1990, McComb 1993, Hazelton et al 1996).

Consensus was reduced even further when dentists were asked what measures they had *actually* taken with patients with eating disorders. Only just over a quarter (26.8%) of respondents had *actually* referred the patient to their GP. Just over a fifth (21.9%) had discussed the problem with the patient, under a fifth (18.3%) had educated the patient regarding dental consequences, but nearly a third (30.5%) had given dental advice. Dental management, which had only been mentioned by 14.6% of respondents as an appropriate measure, was stated as actually undertaken by nearly a quarter (24.4%) of respondents.

Again, these results can only provide an indication of the respondents' behaviour in relation to patients with eating disorders, as there could be many reasons why respondents might have failed to accurately describe the interventions they undertook. However, the results do suggest that dentists who responded to this survey do not generally provide a comprehensive approach to intervention for patients with eating disorders. This matches the conclusion drawn by Harwood and Newton (1995), that

“The results from this investigation suggest that dentists may be unaware of the key role they could play in assisting the mental health professionals to pick up these cases at an early stage.”

Harwood and Newton (1995) confined their survey to an investigation of Dentists' knowledge of the dental aspects of Bulimia. The Gloucestershire survey asked Dentists to comment on what factors might influence their dealings with patients with eating disorders, as knowledge is only one of a range of possible interpersonal and environmental influences on the Dentist/patient relationship.

The responses produced a very wide range of responses (28) suggesting that respondents have had differing experiences of treating patients and have found that several factors affect their behaviour with the patient. There was little consensus amongst respondents, but the largest group (41.4%) felt that the patient's acknowledgement of the problem was important.

This open question raised more questions than it answered and should ideally be followed up by interviews to explore the responses in more depth. Although it is possible to assume how each factor might have influenced the respondent, individual respondents might have been influenced in different ways by the same factor. For example, some dentists might be more likely to discuss the problem with an adolescent and some with an adult, so the category “Age of patient” only suggests possible directions of influence.

However, other categories were clearer because respondents answered more fully. For example, the largest category “Acknowledgement of the problem”, produced some responses that indicated that the Dentist would only pursue the topic of eating disorder if the patient was willing to talk about it. Over all, the wide range of responses suggests the lack of a clearly understood approach by Dentists to patients with eating disorders and begins to offer an understanding of the difficulties that Dentists face when dealing with these situations.

There are limitations to this study. Although the response rate was higher than Harwood and Newton's (1995) survey, it was still less than half the defined population. The results cannot confidently be generalised as representative of all Dentists. However, the similarity between the results of the two surveys begins to indicate that Dentists are probably not very knowledgeable in relation to eating disorders.

Several questions were unanswered by some respondents. Whether there were problems with the design of the questions or respondents were just distracted or unwilling to answer is unclear. The fact that the survey was anonymous prevented follow up regarding missing or particularly interesting data.

The qualitative data would benefit from further exploration by interviews. Interpretation of the data was difficult and open to bias by the investigator. However, some broad themes did emerge from the data. Responding to open questions requires more effort by the respondent, so is likely to attract the fullest responses from those who are interested in the topic of investigation.

Conclusion

This study attempted to explore possible factors that might affect the role of Dentists in early identification and intervention for people with an eating disorder. The results indicate that respondents have infrequent contact with patients with eating disorders, have often received little training and generally have limited knowledge regarding appropriate clinical management strategies. There was a gap between respondents' views of what constituted appropriate intervention and the interventions actually undertaken.

The review of the Dental literature revealed that there was little guidance offered on the management of the interpersonal difficulties present in the Dentist/Patient relationship.

Respondents mentioned numerous factors influencing the way they deal with patients, the most common factor being the patient's acknowledgement of the problem. One weakness of the study is the absence of follow up to respondents' answers leaving responses open to interpretation. However, it is clear from the results that patients with eating disorders are unlikely to be receiving a comprehensive or standardised approach to their difficulties when visiting a Gloucestershire Dentist.

Whilst most Dentists might recognise the erosion caused by frequent vomiting, they do not necessarily provide the health interventions recommended by Dental experts. Future reviews of the dental aspects of eating disorders might have more effect on dental practice if they dedicate substantial attention to practical approaches that have been found to be useful when dealing with patients with eating disorders. This measure is unlikely to be sufficient in itself to improve rates of detection and intervention.

Training sessions for qualified and trainee Dentists could raise awareness of the potential role of the Dentist and provide opportunity to improve confidence in approaches to patients and intervention. In this study, increased confidence was

associated with higher detection rates.

Specialists in eating disorders need to ensure that training is offered to Dentists through their local post-graduate ongoing education programmes and undergraduate Dental Colleges.

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Appendices

Appendix 1 Dentists and Eating Disorders Questionnaire

Appendix 2 Letter to Gloucestershire Dentists