
Understanding the importance of oral health in psychiatric patients

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Dental disease and psychiatric illness are among the most prevalent health problems in the Western world. While the dental needs of mentally ill people are similar in type to those in the general population (Markette *et al*, 1975) there is some evidence that patients suffering from mental illness are more vulnerable to dental neglect and poor oral health (Stiefel *et al*, 1990; Armstrong, 1994). Sims (1987) reports that physical health problems are more common in psychiatric patients. They seem to be poorly recognised by psychiatrists, and oral health is no exception (Hede, 1995). Oral health is an important aspect of quality of life which affects eating, comfort, speech, appearance and social acceptance (Nordenram *et al*, 1994).

The two diseases which have a major impact on the oral cavity are dental caries (tooth decay) and periodontal disease (gum disease). Dental caries is an infective process, which may potentially destroy all exposed tooth surfaces. It is caused by acid produced by micro-organisms which colonise dental plaque, the soft layer which accumulates on the tooth surface. Dental plaque is also a key determinant of periodontal disease. Daily removal of plaque by tooth-brushing, particularly with toothpaste containing fluoride, plays an important part in maintaining oral health.

Routine dental health care for psychiatric patients was previously provided within many of the large institutions. Since the introduction of community care, patients have increasingly been given responsibility for arranging their own dental care, usually with a general dental practitioner. The move towards independence means that patients need a greater understanding of the potential risks of dental disease. This article aims to raise awareness of oral health

issues in psychiatric patients and to promote better dental care for the mentally ill. Even those without natural teeth will need a range of dental services. We feel that there is a duty of care to prevent deterioration of dental health in this vulnerable group.

Recognition of dental problems

Most members of the multi-disciplinary team or carers will be able to recognise some dental problems (see Box 1), especially if the patient complains of a painful, dry or burning mouth or difficulty in chewing. Broken, missing, decayed or loose teeth,

Box 1. Presentation of dental disease

Chewing and biting difficulties
Broken, missing or stained teeth
Complaints of pain in mouth, face and jaw
Dryness or burning of mouth
Visible oral lesions
Infections, swelling of face or jaw
Bleeding gingivae
Broken, missing or worn dentures

Dental problems may be indicated by:

Unexplained irritability
Changes in behaviour
Refusal to eat

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soft tissue lesions, bleeding gums or oral infections may be sufficiently visible to be an obvious problem. In some situations, people may also report that their dentures are lost, broken, ill-fitting or unwearable. When a patient refuses to eat or unexplained changes in behaviour occur, oral health problems should be considered as a potential cause.

Major dental diseases and conditions

Recognition of a dental problem does not mean that the appropriate action will be taken. As an aid to decision-making, the following section provides a brief overview of the main oral diseases and conditions (see Box 2).

Dental caries

Dental caries is the disease process which destroys the hard layers of teeth. It is the result of the demineralisation of enamel and dentine by acids produced as by-products of the metabolism of fermentable carbohydrates by dental plaque micro-organisms. This results in cavitation of specific sites on the tooth surface and as a consequence produces pain and unsightly teeth. Caries is predominately a disease of childhood, although some effects are felt in the very old. However, the treatment of caries and the repair of previous treatment requires dental care throughout life. Preventive strategies involve either strengthening the teeth against acid attack with fluorides, or addressing dietary issues such as the intake of food and drink containing sugars (Gustaffson *et al*, 1954). Good oral hygiene alone is normally insufficient to prevent tooth decay. Treatment of dental caries, once it has produced a cavity, involves either the restoration or extraction of affected teeth.

Periodontal disease

Periodontal disease only occurs in the presence of dental plaque. It progressively affects the gingivae, periodontal ligaments and the alveolar bone of the jaws. Initially the disease causes inflammation of the gingivae and at this stage the process is reversible. If it progresses to destroy the periodontal tissue (periodontitis), this is irreversible. If allowed to progress unchecked, periodontitis will result in tooth loss. Preventative strategies mainly involve reducing dental plaque levels by improved oral

hygiene techniques. As the initial stages of the disease are reversible, early intervention to improve oral hygiene gives the greatest benefit.

Malocclusion

About a third of the population have poorly positioned teeth (malocclusion) which if untreated can create some forms of health problem, including poor self-image. Malocclusions are genetically determined and there is limited opportunity for preventive interventions. Malocclusions are corrected with orthodontic treatment, usually in the teenage years.

Oral cancer

Oral cancer has a similar level of mortality in the population as cervical cancer and accounts for just over 1% of all malignancies in the UK (Speight *et al*, 1993). The prevalence of oral cancer increases with age and 98% of cases occur over the age of 40 years. The major causes of oral cancer are smoking, chewing tobacco and alcohol consumption. Addressing these aspects is the basis of a preventive strategy. The detection of pre-cancerous lesions in the mouth brings major benefits. It improves the survival rate and reduces the distress associated with some forms of radical surgery or radiotherapy.

Tooth wear

Tooth wear tends to increase with age. It may be caused by attrition (which is the action of one tooth grinding upon another), abrasion (where the tooth surface is worn by another agent, for example, a toothbrush) or erosion in which there is chemical dissolution of the tooth. A major factor in the erosion of tooth enamel and dentine is an excessively acidic diet, notably citrus fruits and carbonated drinks. Some studies have recorded over 40% of some tooth surfaces affected by erosion associated with dietary acids (Lussi *et al*, 1991). Attention to diet is the main focus for the prevention of tooth erosion.

Box 2. Major dental diseases and conditions

Dental caries (decay)
 Periodontal disease (gum disease)
 Malocclusions (orthodontics)
 Tooth wear

Role of saliva

Saliva plays an important role in oral health. It contains glycoproteins and mucoproteins which lubricate the oral cavity and enhance food bolus formation, translocation of food and initiation of swallowing. It also contains peroxidases and lysosymes which have antibacterial properties. Saliva buffers and neutralises acids produced by bacteria from foods. Saliva also facilitates the articulation of speech.

Xerostomia (reduced salivary flow) has been implicated in a range of dental conditions. Stiefel *et al* (1990) found increased plaque, calculus formation, caries, gingivitis and soft tissue lesions in people with reduced salivary flow. Individuals with xerostomia were also found to be at greater risk of root and coronal caries formation (Papas *et al*, 1993). The effect was increased when multiple types of medication with xerostomic side-effects were taken. Xerostomia also predisposes to oral candidiasis, especially in denture wearers. Xerostomia can be induced by medication with anticholinergic side-effects (Remick *et al*, 1983; see Box 3). Some autoimmune diseases, for example Sjogrens syndrome, and exposure to oral radiation may cause severe xerostomia.

Sialorrhoea, which is the over-production of saliva, is both unpleasant for the patient and for others, leading to drooling and soreness of the face. Sialorrhoea is a well known side-effect of clozapine and may improve after reduction in the dose. If clozapine has to be continued, it is possible to treat the sialorrhoea using anticholinergic medication. Medication can produce a variety of other side-effects relevant to dentistry (see Box 4).

Box 3. Medications producing xerostomia

Psychotropic medication

Tricyclic antidepressants
Other antidepressants (e.g. selective serotonin reuptake inhibitors)
Lithium carbonate
Butyrophenones
Phenothiazines
Sedatives (including benzodiazepines)

Non-psychotropic medication

Antihistamines
Antihypertensives
Anticholinergics
Diuretics

Box 4. Oral side-effects of medication

Xerostomia
Sialorrhoea
Abnormal facial movements
Tics
Grimacing
Oro-facial dyskinesia
Parkinsonian side-effects
Gingival hyperplasia

Psychiatric disorders affecting dental health

Dental anxiety

In the general population, psychological problems relating to receiving dental treatment are widespread. Slovin (1997) reported that about half of all dental patients experience some anxiety towards their dental visits. Locker *et al* (1996), in Denmark, measured dental anxiety with three different questionnaires on the same population and found that the prevalence rates ranged from 8.2 to 24.0%. It is important to recognise the role that dental fear plays, as it can lead to delay in seeking necessary dental treatment, cancellation of appointments and poor cooperation in the dental chair. Dental fear is one of the most troublesome patient management problems for the dental team, causes distress for the patient and results in high stress levels in dentists.

Dental phobia

Dental phobia is classified in DSM-IV (American Psychiatric Association, 1994) as a specific phobia, which involves a marked and persistent fear of a specific object, activity or situation that results in anxiety on confronting the phobic stimulus. Dental phobia is classified as a specific (isolated) phobia in ICD-10 (World Health Organization, 1992).

People with dental phobia usually report two types of experiences; a painful or traumatic dental procedure or negative personal interaction with dental staff, often in childhood or adolescence. There may also be fearful attitudes learned from parents and others, a feeling of lack of control in the dental situation and the presence of general anxiety disorders (Slovin, 1997).

Dental fear has been divided into categories which correspond to psychiatric diagnoses by Moore *et al* (1991). This has been modified to take account of the classification of mental disorders in DSM-IV (American Psychiatric Association, 1994) (see Table 1).

The 'blood-injection-injury' type of specific phobias include needle phobia, fear of drills and injections and do not usually involve a fear of blood in the dental situation. In the 'situational' type of specific phobia, there may be fear of the dental surgery, dental personnel or the smells and sounds associated with dental treatment. In the 'other' type of disorders, the person is anxious about somatic reactions during treatment particularly gagging. Gagging or retching during dental procedures probably results from a combination of psychological and physiological factors. Gagging may make some people intolerant of wearing dentures or having dental impressions made.

Treatment of dental phobia

Dental practitioners have a responsibility to avoid subjecting patients to traumatic dental experiences, but may not always be aware of this. Sensitisation is more likely when several extractions are made or large amounts of conservation work are required in different areas of the mouth, especially if there is poor cooperation or patient distress.

Dental practitioners may treat dental phobia themselves or enlist the help of the patient's general practitioner or a psychologist. It is very important for the dentist to understand the patient's fears and to explain the nature of the proposed dental treatment. Enneking *et al* (1992) reports that people with specific fears such as gagging and needle phobia respond best to graded exposure *in vivo* and

may also find relaxation techniques enable them to accept treatment. Relapse rates were found to be better in those who had about four hours of therapy. Those with non-specific fear tend to remain vigilant and respond less well to behavioural techniques.

Some dental practitioners offer patients a mixture of nitrous oxide and oxygen to inhale, which produces analgesia and relaxation. Intravenous diazepam can be used for tranquillisation, and music, together with other distraction techniques, may help others. Relatively few patients will require specialist care. Those with severe symptoms should have a thorough assessment by an experienced psychologist or psychiatrist and a carefully structured treatment programme. Dental anxiety may, of course, be part of another type of anxiety disorder.

Generalised anxiety disorder, panic disorder or agoraphobia may also present with some features of dental anxiety (Enoch & Jagger, 1994). Moore *et al* (1991) describe embarrassment and fear with avoidance, which is similar to social phobia.

Psychosis

In a Danish study of hospital patients with schizophrenia, the dental attendance was half that of the normal population (Hede, 1995). Tooth-brushing was down by a third, indicating poorer dental health behaviour. Dental problems may be associated with both positive and negative symptoms of schizophrenia. Teeth are sometimes incorporated into delusions and hallucinations. These include delusions of pain, oral infestation by worms or insects or bizarre delusions.

Somatic delusions about pain or other symptoms in the oral cavity may result in unnecessary treatment. Bridges, crowns, fillings or extractions

Table 1 Types of dental fear

Type of dental fear	Psychiatric diagnosis (DSM-IV 300.29)
Drills, needles, dental equipment	Blood-injection-injury type
Dental personnel or surgery	Situational type
Making dental appointments	
Dental sounds and smells	
Anxiety about somatic reactions during treatment (allergic reactions, fainting, gagging or panic attacks)	Specific phobia: other type
Patients with strong anticipatory anxiety or other forms of anxiety	Generalised anxiety disorder or multiple specific phobias, agoraphobia, anxiety, panic disorder
Embarrassment, guilt, fear associated with dental treatment	Social phobia

may be done, before the psychiatric problem is recognised. In delusional halitosis the patient believes that they are producing a foul odour from their mouth and may cause damage to the oral mucosa by overzealous tooth-brushing and demand unnecessary dental work (Iwu & Akpata, 1989). Self-mutilation is rare and may range from minor abrasions to self-extraction of teeth and glossectomy. One patient removed all his amalgam fillings with a watchmakers screwdriver in the belief that transmitters were in his teeth.

Eating disorders

Dentists have a role in the early diagnosis of eating disorders as they may be the first to observe the effects of the illness. Anorexia nervosa reduces serum calcium levels, predisposing to erosion of tooth enamel and caries formation. Sucking citrus fruits erodes tooth enamel, as does the consumption of carbonated drinks. Vitamin deficiencies may cause bleeding gums, angular cheilosis and a red sore tongue.

In bulimia nervosa large quantities of soft sweet foods are often consumed and vomited. Acidic gastric juices erode the lingual aspect of the anterior maxillary teeth. Hazelton & Faine (1996) reported that up to one-third of people with bulimia had anterior tooth erosion. To reduce abrasion of teeth and gingivae, it is recommended that a mouthwash containing fluoride is used instead of tooth-brushing after vomiting. Dental practitioners with special experience should be available to treat patients in an eating disorders service. Dental restorations, including crowns, a fixed prosthesis or orthodontic appliances are damaged by gastric acid. Therefore, the patient should be motivated and be recovering from their illness well before being given expensive cosmetic dental treatment.

Alcohol and substance misuse

Those who are dependant on drugs or alcohol often neglect their personal hygiene and dietary needs and may live in poor social conditions, all of which contribute to poor oral health. Bruxism (tooth grinding), gingivitis and tooth abscesses are more common in those with alcohol dependency. Smoking cigarettes and drinking alcohol increase the risk of carcinoma of the oral cavity. Those who take illicit opioids may require more analgesia than expected. This group of patients are quite difficult to treat as they often present in an emergency with the disease process in a more advanced condition.

Mood disorders

Psychomotor retardation may result in a person with depression neglecting their oral hygiene. Care plans for those with severe depression should include regular oral hygiene and tooth-brushing. In an elevated mood a patient may decide to have expensive cosmetic dentistry or damage their teeth or gums with zealous flossing or brushing.

Dental manifestations are rare in obsessive-compulsive disorder. However, one patient, a woman aged 42 years, developed obsessions and compulsions about her dental bridge (a form of dental prosthesis). She filed the bridge with an emery board on a regular basis and was very distressed about being unable to resist filing her teeth.

Vulnerable groups

The elderly

Elderly people are more susceptible to caries formation because of reduced salivary flow, low salivary pH and more exposed root surfaces (Persson *et al*, 1991). Oral hygiene and appearance are important to relatives and carers, if not to the patient themselves. Currently, half of the population over 65 years old retain their own teeth and in 10 years time this will rise to about two-thirds of the population in this age group.

People with learning disabilities

Some forms of learning disability are associated with congenital defects of the jaw or mouth, leading to malocclusion, impaired closure of the mouth, drooling of saliva and delayed tooth eruption. Self-mutilation such as biting of the cheeks, tongue and lips can be troublesome. People with learning disabilities sometimes pouch and regurgitate food, which may erode tooth enamel. Poor cooperation with tooth-brushing and a preference for sweet foods contributes to poor oral health. As a consequence, the use of sweets and confectionery as rewards in behavioural programmes is not recommended.

When necessary, dental teams (and particularly dental hygienists) can be involved in planning the maintenance of good oral hygiene as part of a person's daily routine. Keyworkers may need to monitor the oral care in some individuals with severe learning disabilities. Those with poor coordination may need specially adapted tooth-brushes with longer or thicker handles. It is

important to recognise that irritability, changes in behaviour or refusal to eat may be related to dental pain. The keyworker or carer should assist with making regular dental appointments when necessary and the dentist should be warned if the patient is likely to become distressed or need extra time.

Dental treatment

Some patients with severe mental illness require specially skilled dental treatment and need extra time allowed for their appointments (Markette *et al.*, 1975). Cooperation with dental treatment may be affected by a lack of understanding, anxiety or preoccupation with other mental symptoms. Dicks (1995) reported that in one study in the USA 40% of mental health service users failed to keep or cancelled their dental appointments. In the UK general dental practitioners are paid by each item of service they provide, so unreliable attendees are usually unwelcome. Patients who neglect their oral hygiene or lose their dentures tend not to be offered the more expensive types of conservative treatment or prostheses. It is also likely that advanced or extensive dental disease will be treated by extraction rather than restoration, especially in those who are poor attenders or who are uncooperative with dental care.

Obtaining consent for dental treatment can be difficult in people with an impaired capacity to understand or express themselves. A trusted keyworker may be able to help explain the proposed treatment and reduce the patient's anxiety, so enabling them to accept dental treatment. In our experience staff themselves may be afraid of dental treatment and without guidance may be reluctant to be involved with dental care. Sometimes the keyworker or carer may remind the patient of the appointment or offer to accompany the patient to see the dentist.

It is helpful for dental practitioners to have written information about psychotropic medication so drug interactions can be avoided. Also it is important for the dentist to know about any other physical disorder which may complicate dental treatment, for example, heart disease.

Dental health behaviour

Regular brushing with a toothpaste containing fluoride is important, as is the avoidance of frequent intakes of cariogenic food or drink. Alcohol and smoking are risk factors for oral disease. Special care is needed for those taking medication with xerostomic side-effects. Liquid forms of medication without sugar should be chosen, whenever possible.

Good denture care should be part of routine physical care. Lucas (1993) reported that psychiatric patients who wore dentures had more oral infections of candidiasis, stomatitis and angular chielosis than control subjects who did not wear dentures. These painful conditions were worse in those who wore dentures at night. Over half the females in the study wore their maxillary dentures at night. It is recommended that all dentures are removed at night and cleaned before use.

Dental services

There have been major changes in the way in which dental health services and treatment have been provided since the inception of the National Health Service in 1948. Significant advances have been made in pain control, dental materials and treatment modalities. Instead of general anaesthesia for extractions, there is now widespread use of sedation and local anaesthesia. There are also a variety of techniques for treating people with dental fear or phobia.

In the late 1950s the high-speed drill revolutionised the delivery of restorative dental treatment and so an increasing proportion of the population retained their teeth rather than having extractions. The more recent development of adhesive filling materials has further improved tooth restoration and new veneer techniques have increased the options for cosmetic dentistry. The ability to anchor prostheses directly to the jawbone, as a result of the development of osseointegrated implants, is a major advance. Paradoxically, while the number of dental practitioners has steadily grown, the increased complexity and range of care has reduced the general availability of dental care in the population.

Dental care for people with mental illness

In the UK, dental care through the general dental service is currently free for children and those adults who receive state benefits. Other adults have to contribute to the cost of dental care when receiving National Health Service treatment. General dental practitioners in the general dental service are currently funded predominantly on an item-of-service basis. This can be a perverse incentive, encouraging over-treatment and discouraging the care of patients who may be difficult to treat. Practices that care for patients who require extended treatment times, such as people with mental illnesses, can be disadvantaged financially.

In some areas the community dental service, which is a salaried service, has taken over some of the routine dental care of people with severe mentally illnesses. The service is funded by the local health authority or health board and complements the service provided by general dental practitioners. In view of the high levels of untreated dental disease in people with mental illnesses and the unsuitability of many of these potential patients for treatment in general dental practices, the role of a salaried service such as the community dental service becomes increasingly important for these patients (Box 5).

Recommendations for action

Consultant psychiatrists may take action, first at the level of care for individual patients and second at a strategic planning level with the development of suitable dental services. For each patient it is most important that oral health is a key element of their physical assessment. Urgent dental needs should be identified. Then, if necessary, expert advice should be obtained from the local dentist with whom the patient is registered. If the patient does not appear to have their own dentist, it should be possible to arrange a dental opinion from the community dental service. Contact telephone numbers are available from the local health authority, usually through the consultant in dental

Box 5. Summary of key points

Oral health is an important and integral part of health care

Psychiatrists should ensure that oral hygiene is part of routine care and incorporated into care plans

Patients and staff should be made aware of the importance of tooth-brushing with toothpaste containing fluoride and the avoidance of dietary sugars and carbonated drinks, in the prevention of caries

Members of the multi-disciplinary team should be encouraged to assist patients maintain their oral health with good oral hygiene and access to dental treatment

Suitable dental services should be provided for psychiatric patients, taking into account their special needs

There should be more communication between dentists and psychiatrists

public health. Alternatively, contact may be made via the local community trust, which usually manages the community dental services.

The new White Papers for health in the UK (Department of Health, 1997; Scottish Office and Department of Health, 1997; Welsh Office, 1998) will affect the development of long-term strategic plans for dental services. In England and Wales, the development of primary care groups and local health groups, respectively, will offer an opportunity for the provision of appropriate dental services for psychiatric patients. In Scotland the primary care trusts will be involved in the provision of dental and psychiatric services. In England, the dental aspects of the health improvement programmes are likely to be overseen by local consultants in dental public health and will be crucial in determining the nature of health service provision.

It is most important that the opportunity is taken to redress what would appear to be a serious failing in dental services for psychiatric patients. It is no longer acceptable that people with psychiatric illness should have to rely on emergency services for their dental care.

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2. Dental phobia:
 - a causes delays in seeking essential dental treatment
 - b usually begins in middle age
 - c can be caused by extensive dental treatment
 - d is expected to increase in the next 10 years
 - e responds best to relaxation therapy.
3. General dental practitioners:
 - a provide dental care for psychiatric patients in the community
 - b can recognise eating disorders
 - c are paid per item of service
 - d receive additional remuneration for difficult patients
 - e recommend that dentures are worn at night.
4. Saliva:
 - a predisposes to caries formation
 - b is increased by phantom chewing
 - c production increases with age
 - d affects speech
 - e has antibacterial properties.

Multiple choice questions

1. Tooth-brushing with a fluoride-containing toothpaste:
 - a prevents the accumulation of dental plaque
 - b is recommended after each episode of self-induced vomiting
 - c is recommended for treating periodontitis
 - d causes tooth attrition
 - e may strengthen tooth enamel.

MCQ answers

1	2	3	4
a T	a T	a T	a F
b F	b F	b T	b F
c T	c T	c T	c F
d F	d F	d F	d T
e T	e F	e F	e T