Prevention and Control of Dental Erosion: Psychological Management

11

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Abstract

Dentists often come across patients with psychological difficulties that underlie their dental problems, and dealing with these may be an integral part of their treatment. This chapter explains how anxiety, fear, depression, obsessive-compulsive problems, and eating disorders may prevent these patients from seeking dental treatment or reluctant to learn how to improve on their dental health. It is important to emphasize that knowledge and skills involved in the psychological assessment and management can play an important part in the prevention of dental erosion. Psychoeducation leaflets are recommended to help them improve their future dental health. Dental schools can incorporate relevant psychological training in their core curriculum.

11.1 Introduction

Although not immediately obvious, the dentists' task of managing oral diseases is often made more difficult by subtle psychological factors. What psychological difficulties are there in addition to the readily observed fear or anxiety related to visiting dental clinic? An answer may be seen by considering dental erosion. It is now

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understood that dental caries, caused by acid of bacterial origin, is not the only acid-dependent dental disorders. Dental erosion, a dental hard tissue disorder, is now known to be caused by acids of nonbacterial origin. Acids that cause dental erosion are of intrinsic (gastric) and extrinsic (dietary and environmental) origin; thus, the etiology of dental erosion is multifactorial, involving chemical, biological, and behavioral factors [1, 2]. Relevant to the present discussion is the fact that an individual's personality trait or psychopathology predisposes him/her to prefer foods or drinks with acidic content or exhibit psychological illness associated with vomiting or regurgitation of gastric acid into the oral environment and in contact with the teeth.

Many individuals with eating disorders have dental problems. Why may eating disorders lead to dental problems? How can a dentist tell that a patient is suffering from eating disorders? This brief introduction suffices to show that dental treatment may implicate psychopathology.

11.2 Psychology and Dental Problems

Psychology may be linked to tooth erosion directly or indirectly. Consider first how psychological factors affect dental health directly.

11.2.1 Direct Linkage

A common psychological factor is stress. It affects the operation of some body organs and the endocrine system.

11.2.1.1 Psychological Stress

The brain influences our immune system, as witnessed by the fact that we are more prone to catching colds, viruses, and infections when we are under stress. By the same token, dental problems may also erupt more readily when an individual is under stress. We tend to feel more anxious and entertain negative thoughts when we cannot cope with life stresses. For example, if one is anxious, one may conclude that one must have offended one's friend who does not come to dinner as expected. Consequently, our coping skills become less effective. We become more lethargic towards life and daily chores. Our immune system also mimics these behavioral symptoms; it becomes less effective.

Hans Selye [3] described the difficulties and strains experienced by organisms as they struggled to cope with, as well as adapt to, changing environmental conditions.

Both good and bad stresses would tax an individual's problem-solving potentials and coping skills.

When confronted with a threat or danger (be it real or perceived), the body undergoes a series of biological changes. The stress response starts in the hypothalamus that stimulates the sympathetic nervous system (SNS). The SNS, in turn, causes the adrenal medulla to secrete adrenalin and noradrenalin. While high levels of cortisol levels are beneficial in the short term, they are harmful in the long term.

Negative emotional states can impair the functions of the immune and the cardiovascular systems, leaving the persons more prone to infections and diseases. As the effects of stressful experiences are cumulative, prolong exposure to stresses sensitizes the individual's immune system. The individual thus becomes more reactive to subsequent stresses. There is hence a perpetuating sequence of increasing sensitivity (to stress) and weakening of the immune system.

11.2.1.2 Anxiety

Anxiety is a condition in which an individual experiences severe fear (of various objects or life events) that the individual has panic attacks. Some may suffer from anxiety without any specific instigating stimulus or event (called this "general anxiety"). Symptoms may be ill-defined discomfort or malaise. The individual cannot sit still or cannot eat or does not sleep well. These individuals may use alcohol or medication or chemical substances to calm themselves.

In any case, the individual's autonomic nervous system anticipates a "fight" or a "flight" reaction in which there is stomach churning or nausea. In short, the body produces more adrenalin. For some, visiting the dentist is one of those fear-inducing events. The person with anxiety tends to conjure up specific fearful images (i.e., injection fear, cleanliness of instruments, infections) which may set off a panic attack, after which she/he may learn to avoid attending dental checkups.

11.2.1.3 Obsessive-Compulsive Disorders

People suffering from obsessive-compulsive problems often have an anxiety predisposition. They can be very obsessive about how they look, particularly, how their teeth feature in their general appearance. Fearing that people may laugh at them because their teeth do not look perfect, they may coerce their dentists to make their teeth perfect even though there is no defect at all. In extreme cases, they may ask the dentist to remove the whole set of their healthy teeth and to choose to have dentures instead. However, more often than not, problems with their teeth are the result of their having excess of acidic drinks or sweets. At the same time, their unhealthy dietary preference is due to the underlying feeling of being depressed.

An example of obsessive-compulsive disorder is the case with Marianne, 40 years old. She has been suffering from an obsessive-compulsive problem. Her worry is that she/he might catch HIV through contamination and might die because of HIV. Her daily thoughts and routines center around ways to avoid going out to any public places (including hospitals, doctors, and dentists). She avoids any injection or any surgical investigations. At the same time, she/he is obese because she/he eats a lot, drinks a large quantity of sodas, and does not do any exercise. She has been told that she/he may have diabetes. As her/his personal and dental hygiene are poor, it is not surprising that she/he has dental problem (probably tooth erosion). Yet, she/he would not visit any dentist for fear of contamination.

11.2.1.4 Depression

Depression is a common problem encountered by individuals who feel that their lives are on the whole pretty negative. Some of them may have suicidal ideation.

The individual's chronic negative mind-set and emotive states affect the biological mechanisms which tend to "shut down," resulting in a less effective capability for dealing with infections or diseases.

The physical symptoms of depression include poor sleep, low motivation, less stamina, and poor appetite. Instead of having main meals, the sufferers tend to turn to eating snacks and soft drinks for a quick surge of energy. The individual thus has insufficient healthy and balanced nutrients. At the same time, the individual might turn to alcohol for relief.

People who are depressed also tend to ignore personal hygiene. They pay no, or less, attention to dental care or hygiene. They consequently have more oral infections. The regurgitation or vomits through chronic alcoholism or excessive stomach acids promote tooth erosion more readily.

An example of depression is Leonard, aged 55. He became depressed 10 months ago when his business went downhill, and he declared bankrupt. His mind kept searching and concentrated more on his past failures. He was not able to look at his own achievements. He became more moody and argued a lot with his wife and children. He did not want to get out of bed in the morning, and he had no motivation to do anything. Even though he used to enjoy food, he gave up eating after the onset of depression. Instead, he drank whisky and beers in order to "numb" his mind and he used alcohol to help him sleep. Leonard lost a lot of weight after 6 months. His health deteriorated as he neglected his hygiene more and more. He suffered stomach pains and vomited frequently as a result of excessive drinking. Excessive stomach acids damaged his teeth. When he was taken to hospital for treatment of his depression, his dental problem became an issue.

11.2.2 Indirect Linkage

Adverse past experiences can create distorted patterns of thinking. The resultant anxiety or misguided beliefs lead to avoidance and other maladaptive behavior.

11.2.3 Avoidance of Dental Visits

Like adults, children experience dental problems or have to have their teeth cleaned. What the child's experience is like depends on how the child (a) is taught about dental hygiene and (b) is prepared for the child's first visit to the dentist. For example, does the stranger in a white coat appear as a threat? Is sitting on a lovely swiveling dental chair a fun thing to do? Would the word "dentist" conjure up a negative picture involving needles and pain?

The process of psychological conditioning plays an important part in inducing fear in children. There are two types of dental fear, namely, subjective fear and objective fear.

Any child who has never been to a dentist may be fearful of dental clinic as a result of having been told by someone he/she trusts that going to the dentist is

painful. This type of fear may be characterized as "subjective" because it is based on someone else's subjective opinion. The second type is objective fear. For example, some children learn to be fearful of dental visit after the first visit when they have toothache. This is an example of fear induced by a bad memory of, or an unpleasant experience of, visiting the dentist.

Adolescents or adults with psychiatric difficulties, or psychological problems (such as depression, eating disorders, and anxiety), are more likely to resist visits to the necessary dental clinic because of their either subjective or objective fears. As anxiety or fear is a self-taught cognitive learning process, there is a need to change the patient's beliefs and attitudes in order to achieve appropriate dental care.

11.2.3.1 Classical Conditioning

Just one visit to the dental surgery (e.g., for tooth extraction) may be sufficient to instill fear in a child. The child remembers the pain of extraction, but not the reason why (viz., the toothache that requires dental attention). The dental clinic is the setting in which the child experiences pain. The mere mention or the sight or the memory of the clinic is sufficient to evoke the memory of pain. This is an example of classical conditioning (Pavlovian), much like the capability of the bell to elicit a dog's salivation when the bell has preceded the presentation of food pellets. The word "dentist" is like the bell, where painful process of tooth extraction plays the role of food pellets. The fear reaction is analogous to salivation.

Children who had a history of tooth extractions were three and half times more likely to be anxious than children who had no extraction history. Extraction under general anesthesia is quite traumatic for young children.

11.2.3.2 Operant Conditioning

While the fear of going to the dentist is the result of classical conditioning, avoiding the dentist is established by operant conditioning [4]. A behavior may be strengthened if it is followed by a reward. This phenomenon is called "positive reinforcement." By the same token, any behavior that removes a negative stimulus (e.g., pain) is also strengthened, a phenomenon called "negative reinforcement."

Having something else to do (instead of going to the dentist) is the negative reinforcer because it removes the anxiety or experience of pain. An individual can cancel a dental appointment by scheduling a "more important" appointment. This is an example of avoidance behavior. Such a psychological feat can maintain dental fear forever.

11.2.4 Overcoming Fear of Dental Visit

Some ways that may be helpful in overcoming the fear of visiting the dentist are the following:

- Find a dentist whom you can trust.
- Build up a therapeutic relationship.
- Ask the dentist questions about dental health or treatment.

- Feel comfortable to talk with your dentist.
- Be convinced that dental treatment is important to your health.
- Be optimistic that dental treatment will be successful.
- Learn to relax.
- Find a distraction (music) or imagine other pleasant pictures during dental treatment.
- Request sedative medication if everything else fails.
- Be conscientious and positive in looking after the teeth with regular checkups.

11.3 Eating-Related Maladaptive Behavior

Eating disorders (anorexia nervosa, bulimia nervosa) are recognized as a difficult-to-deal-with health concern. Such is the case because eating disorders often occur simultaneously with other forms of psychopathology. Consequently they tend to be missed because it is difficult to spot them [5]. Mortality rate for sufferers of eating disorders has been estimated to be 4.5 % [6] due primarily to medical complications. They tend to be resistant to treatment, either psychiatric or psychological. Be that as it may, over a third of the patients suffering from eating disorder have been diagnosed by dentists when these patients are treated for tooth erosion [7].

Anorexic and bulimic patients tend to adopt the chronic habits of purging or induced vomiting as a way of evacuating what they have eaten in order to avoid putting on weight. Stomach acids plus the high acidic content of foods would erode the surfaces of the enamel of their teeth. The front of their tooth is worn down and becomes thin. The next common complaints are discoloring of the tooth and heighten tooth sensitivity. Putting their fingers down the throat (not an uncommon behavior) causes soft palate damage.

Patients who purge tend to experience dry mouth as a result of the use of laxatives and diuretics. With recurrent vomiting, their bodies are poorly nourished with diminished minerals, vitamins, and proteins, which are needed to keep dental tissues healthy and clean; as a result bad breath is another common problem. Over an extended period of time, the anorexic and bulimic patients may also develop osteoporosis due to calcium deficiency. This medical problem leads to the shrinking of their jawbones.

Finally, a frequent binge and purge cycle can cause an enlargement of the salivary gland. Enlarged glands can be painful and are often visible to others; this causes further embarrassment to the persons with eating disorders.

11.3.1 What Are Eating Disorders?

Eating disorders are complex syndromes encompassing physical, psychological, and social features. There have been attempts to produce subcategories of this disorder so as to provide better understanding. The most significant split was between (a) sufferers who maintain a low body weight (anorexia nervosa) mainly by

restricting food intake and (b) individuals who resorted to vomiting [8]. Many of this latter group also show binge eating behavior. Another group resembled the latter bingeing and vomiting group but maintained normal body weight, emerged as bulimia nervosa [9, 10] in the third revision of the Diagnostic Statistical Manual (DSM-III) of the American Psychiatric Association [11].

11.3.1.1 Anorexia Nervosa

The term "anorexia nervosa" refers to a potentially life-threatening eating disorder characterized by an intense fear of gaining weight, a distorted body image, and amenorrhea [12]. Currently the *Diagnostic Statistical Manual* (5th edition) (DSM-V) sets out the Criteria for Anorexia Nervosa [13]. That the person has an intense fear of gaining weight or becoming fat, despite being underweight, thus undertakes persistent methods to stop any weight gain and refuses to maintain normal body weight of which she/he has no insight that it is a problem. There are two subcategories of anorexia nervosa: (1) restrictive type – the individual has no binge eating or purging behavior and (2) binge eating or purging type – the person engages in binge eating and purging behavior (i.e., self-induced vomiting, misuse of laxatives, diuretics, enemas) during the current episode.

Dentists may find it helpful to know the prevalence rate for as well as demographic features of anorexia nervosa.

(i) Females make up 90–95 % of cases.
(ii) Peak age of onset is between 14 and 18 years of age.
(iii) Often it escalates from dieting to anorexia.
(iv) Often during a stressful event (e.g., parental divorce, moving, or experiencing failure), dieting can escalate into anorexia.
(v) The motivation to become anorexic is often the fear of growing up.

11.3.1.2 Bulimia Nervosa

The term "bulimia nervosa" refers to a disorder marked by frequent eating binges followed by forced vomiting or other extreme compensatory behaviors to avoid gaining weight. The criteria for this disorder in DSM-V [13] suggest that the person feels she/he is not in control, consumed a definitely large amount of food within 2 h period, more than most people can eat, with inappropriate compensatory behavior, at least once a week for 3 months. There are also two subcategories of bulimia nervosa: (i) purging type – the person regularly engages in self-induced vomiting or misuse of laxatives, diuretics, or enemas and (ii) non-purging type – the person has used inappropriate compensatory behaviors such as fasting or exercise, but not self-induced vomiting.

The prevalence rate for, as well as demographic features of, bulimia nervosa is as follows:

(i) Women make up 90–95 % of cases.
(ii) Usually begins in adolescents or adulthood (between 15 and 21).
(iii) Weight usually remains within a normal range.

(iv) May have between 2 and 40 binges per week, though number is usually close to 10.
(v) Usually sweet, high calorie, typically soft food and drinks.
(vi) The binge eating starts usually and is preceded by feelings of overwhelming tension and followed by self-blame, shame, guilt, and depression.

It is estimated that about 1 in 250 females and 1 in 2000 males suffer from anorexia nervosa in terms of the UK Guidelines on Eating Disorders (2006). The phenomenon is seen generally in adolescence or young adulthood. About five times that number will suffer from bulimia nervosa. There are other atypical eating disorders, apart from anorexia nervosa and bulimia nervosa.

11.3.1.3 Other (Less Well-Known) Types of Eating Disorders

Relative to anorexia nervosa and bulimia nervosa, far less is known about *binge eating disorder* [14]. Apart from binge eating, the systematic profile of *binge eating disorder* overlaps little with other eating disorders. It presents itself much later after 20 and is noticeable in their 30s or 40s. It is difficult to define clinically what is bingeing or having a tendency to overeat with no dietary restraint. The sex ratio of *binge eating disorder* is more even. Many people with binge eating disorder are obese. Self-induced vomiting and laxative misuse are not present. Depressive features and dissatisfaction with shape are common, and the overevaluation of the weight and shape is less marked than in bulimia nervosa.

Some eating behaviors are so atypical that they do not fit in with the diagnostic criteria of anorexia or bulimia nervosa, but their weight is kept in the low normal range, and they do excessive exercise and kept an extreme dietary restraint. Many people with *atypical eating disorders* have suffered from anorexia nervosa or bulimia nervosa in the past.

11.3.1.4 Why Are There Eating Disorders?

Sensitivity to one's body image leads to dissatisfaction with one's body image. An instigating factor may be some negative comments on how the adolescent look. This distorted thinking is further perpetuated by fashion and fad that glorifies thinness. Contemporary societies seem to emphasize on "small is beautiful," as witnessed by TV advertising on various means of reducing one's weight. These TV advertisements introduce new diet drinks, giving people the idea that having diet drinks is the norm.

Anxious young persons with a perfectionistic personality are readily influenced by fashion and fads. One of my young patients, aged 10, watches obsessively every evening one TV program on weight loss. He is already choosing his mini-diet sheet. Eating disorders may be triggered by an emotional turmoil due to life crises (e.g., losing a boy friend). In order to "improve" their body image, individuals thus motivated would select a host of questionable diets. They may adopt excessive behaviors (e.g., taking up excessive exercise or using laxatives) in order to make themselves "acceptable." These problems stem from early days of their lives.

11.3.1.5 Effects of Eating Disorders on Self and Others

Family members of patients with eating disorders are always at a loss as to how to help the patients, or cope with the problems of being confronted with the phenomenon. One particular issue is that a prolonged period of anorexia nervosa leads to acute physical complications. Severe weight drop (i.e., under BMI 20) could result in mortality. Long-term effects on anorexia nervosa patients include depression, avoidance of relationships with others, poor academic or occupational functioning, infertility, and interpersonal problems, particularly with the parents.

11.3.1.6 Prognosis for Eating Disorders

Dealing with eating disorders is extremely difficult, let alone assessing the success rate of treatment. To begin with, many patients simply deny the problem and resist treatment. When they do receive treatment, they are reluctant to disclose information necessary for the treatment. Furthermore, there are insufficient services with experienced staff in the health sectors in some part of the countries. Unfortunately, a number of those with eating disorders are stigmatized by inexperienced clinical staff, and they are on occasion frightened of being trapped in treatment rather than helped by it.

Be that as it may, there are a few studies with a lengthy follow-up period of the course and outcome of bulimia nervosa in the community. With the most effective treatments, about 50 % of bulimia nervosa patients can be asymptomatic from 2 to 10 years after initial diagnosis. Twenty percent are likely to continue with the full form of bulimia nervosa, while 30 % may have remissions or relapses. Many people with bulimia nervosa are not receiving any form of help [15].

One 10-year follow-up study of 50 people with bulimia nervosa found that 52 % had fully recovered and only nine percent continued to experience symptoms of bulimia nervosa [16]. A larger study of 222 followed up for a mean of 11 years revealed that 11 % still met the criteria for bulimia nervosa whereas 70 % were in full or partial remission [17]. However, many will remain chronic or relapsed, maintained by their overvalued belief in the importance of appearance and thinness [18].

11.4 Effects of Eating Disorders on Dental Health

Eating disorder has effects on both soft and hard oral tissues, which can signal, to the dentist, the existence of eating disorder not revealed by the patient at the medical history taking. The most common effects on oral soft tissues are (i) dry mouth due to the use of laxatives and diuretics and (ii) enlargement of the parotid salivary glands in response to the repeated stimulus for an increased salivary flow rate due to frequent binge and purge cycle. Dental erosion (erosive tooth wear) is the most common effect on oral hard tissues. Erosive tooth wear as an effect of eating disorders is detailed in Chap. 3 of this book [1], and its prevalence is discussed in detail in Chap. 1 of this book [19]. Dental erosion is the wear of dental hard tissue by acids of dietary or gastric origin. As discussed above, eating disorder may be associated with bingeing on acidic foods and/or drinks followed by vomiting and/or purging. These

characteristics are associated with frequent bathing of the teeth with gastric or dietary acids over an extended period of time, with consequent wearing away of the dental hard tissue through acid demineralization, initially affecting the enamel (Fig. 5.3b), and with progression to advanced stage, dentin is exposed (Figs. 11a, b). Exposure of dentin will result to hypersensitivity in response to external stimuli of cold, hot, tactile, or osmotic nature. Acid of gastric juice, due to vomiting and/or purging, causes wear of the palatal surfaces of upper incisors (Fig. 12.4), and with lesion progressing, the lingual surfaces of premolars and molars become affected, and in more advanced stages, the process extends to the occlusal surfaces of molars and to the facial surfaces of all teeth [2, 4, 19]. This characteristic distribution is illustrated in Figs. 1.4 and 1.5 in this book. Erosion due to dietary acid has no specific distribution pattern but depends on factors such as method of application (Fig. 5.9). However, dental erosion due to eating disorder cannot be managed without dealing with the underlying psychological problem.

11.5 Training Health Professionals to Manage Eating Disorder Patients

It takes time and efforts to uncover eating disorder. However, primary healthcare professional often does not have sufficient knowledge or contact time with people with eating disorders. They are often reluctant to disclose their problems for fear of stigmatization. At the same time, research has found that individuals willing to talk about their difficulties are more likely to seek treatment. Professionals proficient in establishing rapports and who are being approachable and empathetic are essential for helping eating disorders patients. For these reasons, it helps to consider psychological assessment and management.

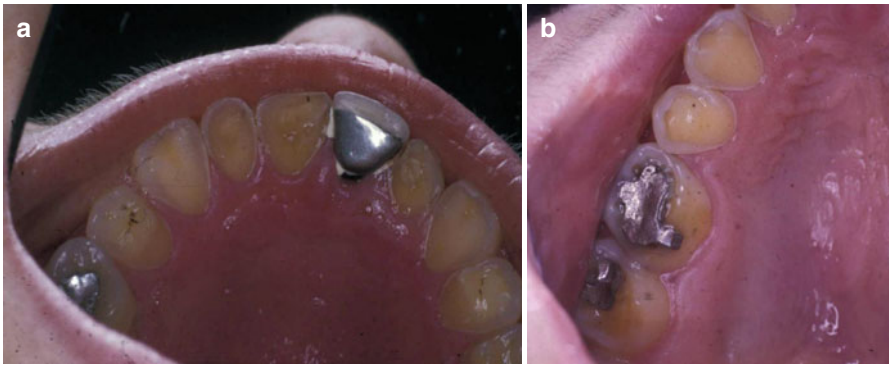

Fig. 11.1 Palatal surfaces of the upper (**a**) and lower (**b**) arches with advanced erosive wear exposing the dentin.

When confronted with a serious case of tooth erosion, the dentist needs to have the following information about the patient:

(a) How often does the patient have dental visits?
(b) Is the patient apprehensive of dental visits?
(c) What is the patient's psychological state of well-being ?
(d) What is the cause of the patient's dental erosion?

11.5.1 Rapport Building as Management

To build the necessary patient-dentist rapport, the dentist must show empathy with their patients. Specific rapport building techniques involve both verbal and nonverbal behaviors.

11.5.1.1 Verbal Behavior

(a) Speak softly to the patient.
(b) Ask relevant background questions.
(c) Give positive feedback for answers.
(d) Use gentle prompts to help the patient focus on the dental issues or to prevent the patient from digressing.
(e) Give indirect advice, rather than using condescending directives.
(f) For example, say "I am hearing what you are saying. I will try to understand what you are going through …" instead of saying "I understand." A skilful dentist is able to combine different interviewing styles within an encounter. Soliciting the dental history and psychological state of mind of a patient should be like a flow of a natural conversation.

11.5.1.2 Nonverbal Behavior

(a) Adopt an open mind.
(b) Focus on the patient as a person.
(c) Maintain a supportive, nonjudgmental attitude and demeanor towards the patient.
(d) Encourage the patient to be autonomous.
(e) Encourage the patient to make choices.
(f) Foster a sense of collaborative relationship in the treatment.

The aforementioned objectives may be achieved by (a) holding warm eye contact with the patient, (b) maintaining relaxed facial muscles, (c) smiling, and (d) occasional nodding to indicate that you are listening or empathizing with the patient's difficulties.

11.5.1.3 Engagement

The dentist must also consider the patient's feelings about, as well as the motivation to rectify, the dental erosion problems. This consideration is particularly important for patients with eating disorders. A "pushy" dentist would provoke resistance. In particular, the eating disordered patients may have mixed feelings and ambivalence in disclosing or seeking help. A strategy opens to the dentist is make explicit a dilemma in the patient's mind. The dilemma being whether (a) to live a healthy life/good teeth and cope with body image or (b) to self-inflict harm as a result of restraining her/his diets. At the same time, the dentist suggests a means to resolve the dilemma.

Every patient has his or her own pace of processing information. DiClementi and Prochaska [20] put forward the *Stages of Change* model (see below). The model is a very effective way of conceptualizing a patient's motivation. The model is, moreover, particularly appropriate for dental patients with addictive behaviors (e.g., substance abuse, excessive gambling, excessive intake of alcohol, obsessive rituals, eating problems).

11.5.2 Motivation and Stages of Change

Suppose that the dentist is confronted with a patient (Patient *A*) with eating disorders. What difficulties may the dentist encounter? What can the dentist do? Answers to these questions have to be sought by examining the patient's psychological processes as follows.

11.5.2.1 Precontemplation Stage

Patient *A*, in the first, *precontemplation*, stage has no insight, but denial of any problems. Patient *A* would be resistant to any treatment by a dentist because she/he does not realize (a) that there is any underlying psychological problem and (b) how dental health may be affected by psychological difficulties.

11.5.2.2 Contemplation of Psychological Issue

In the second, *contemplation*, stage, Patient *A* has a feeling of ambivalence about seeking help. The second issue is the onset of severe pain due to dentin hypersensitivity. A knowledgeable and friendly dentist may prompt Patient *A* to explore the possible causal link between (a) maladaptive behaviors (like eating disorders or addictive behaviors) and (b) serious dental problems. Patient *A* begins to consider how the tooth erosion problem can be helped by dealing with the underlying causes of his or her maladaptive behavior.

11.5.2.3 Preparation for Psychological Treatment

Patient *A* is now prepared to "face the challenge," and Patient *A* becomes more receptive to the dentist's suggestions. *Preparation* is the stage in which patient is convinced of the necessity of receiving both dental and psychological treatments. The success of preparation depends on the support and reassurance offered by the dentist (as well as cognate health professionals).

11.5.2.4 Action

Action is a stage when the patient follows a prescribed plan of change in attitude and cognition, in addition to (a) changing diet, refraining from sweet and acidic foods, (b) observing dental hygiene, and (c) having regular dental checkup.

The next step for those with eating disorders and alcoholism is (i) to discuss the problems and (ii) to set targets for change with full commitment from the patient to be referred to the clinical psychologist or psychiatrist. These patients need constant support and empathy from other people in addition to a lot of courage from themselves.

11.5.2.5 Maintenance

Maintenance is a completion stage in which the patient assumes a lifestyle incompatible with eating disorders or addictive behaviors. The new lifestyle is conducive to dental health. The challenges for the patient are how to (a) eliminate the psychological hang-ups that cause the problems in the first place and (b) minimize the danger of relapse. The dentist remains the source of support and praise.

11.5.3 Soliciting Clinical Information

Suspecting Patient *A*'s dental problems may be caused by some underlying psychological difficulties, and the dentist may wish to first identify some symptoms in general terms by asking the following respective sets of questions.

11.5.3.1 Identify General Symptoms of Depression

Whether or not a patient is having some general symptom of depression may be ascertained with the questions tabulated in Table 11.1. If they answer "yes" to more than seven questions, it is appropriate to suggest that the patient may have some depressive symptoms which may contribute to the dental problem. After getting a fuller history, the dentist may suggest referrals to her/his doctor.

11.5.3.2 Psychological Issue Questions for Eating Problems

Whether or not a patient is having some eating disorders may be ascertained with the questions tabulated in Table 11.2. At the end of the assessment, the dentist is in a better position to identify and draw an approximate profile of the patient's eating problem behaviors and elicit some of the full story.

11.5.3.3 General Screening Questionnaires for Eating Disorders

Further tools are available for refining the dentist's understanding of a patient with eating disorders in primary care setting. Several simple screening questionnaires have been developed and evaluated over the years. These include SCOFF [21], rapid screen for college girls [22], Edinburgh's Bulimic Investigatory Test (BITE) and the Binge Eating Scale (BES) [23], the eating disorders not otherwise specified (EDS-5) [24], and Eating Disorder Screen for Primary Care (ESP) [25, 26].

The SCOFF questionnaire [21, 27, 28] was developed and validated in the United Kingdom. The name is an acronym that comes from the questions (Sick = vomit;

Table 11.1 Symptoms suggestive of underlying psychological issues

	Symptoms	Yes	No
1	Do you find it difficult to get up in the morning?		
2	Do you feel you can't cope?		
3	Do you feel you can't face the day?		
4	Do you feel hopeless and helpless?		
5	Do you feel tired all the time?		
6	Has you lost your appetite every day?		
7	Can you fall asleep easily?		
8	Do you sleep too much?		
9	Do you find visiting a dentist or a doctor a chore? Why?		
10	Do you feel fearful?		
11	Do you notice that you have elevated heart beat with no reasons? When did that happen?		
12	Do you find it difficult to breathe? Specify the circumstances		
13	Are you on medication or receiving help for some psychological problems? Elaborate on the answer		

Table 11.2 Symptoms suggestive of eating disorders

	Aspects relevant to eating disorders	Symptom	Yes	No
1	Issues of weight	Do you feel overweight?		
		What is your actual weight?		
		What is your ideal weight?		
2	Body image	Do you dislike your own body image?		
3	Issues of eating	Are you restraining your eating?		
		What would happen if you did not control your eating?		
		What is the pattern of restraint?		
		What foods/drinks do you prefer?		
		Do you avoid certain foods? Why?		
		How do you feel if you do not control your eating?		
4	Issue of overeating	How do you know that you have eaten too much?		
5	Means of dealing with overeating	What do you do if you feel you have eaten too much?		
		Do you make yourself vomit?		
		Have you vomited blood?		
		Do you wash out "excess foods" by drinking copious fluids?		
6	Awareness	Do you think you are suffering from an eating disorder?		
		Have you told anyone about your difficulties?		

Control, One stone off =14 lb, Fat, Food). It consists of five questions designed to clarify suspicion that an eating disorder might exist rather than to make a diagnosis. The questions can be delivered either verbally or in written form. There is one study validating the use of the SCOFF in adult women of a general practice population.

Further research is needed to evaluate the SCOFF questions before they can be recommended for use in primary care.

The Eating Attitudes Test, EAT [29], is probably the most widely used screening tool in epidemiological studies. In addition there are a number of other pencil and paper measures to assess eating disorder psychopathology (e.g., the Eating Disorder Inventory, EDI [30]). However, these tests take a long time to administer, and the results have to be interpreted by specialists. Such instruments may be well suited for evaluating treatment progress in patients with eating disorders, but may not perform well in screening for eating disorders in community samples due to symptom denial and low prevalence [31, 32].

11.5.3.4 General Screening Questionnaires for Depression

Apart from eating disorders, dental problems may also be caused by depression. It would be helpful to the dentists if they have access to tools measuring depression. A commonly used questionnaire is the Beck Depression Inventory II [33], which is easy to use. The symptoms of depression being assessed are appetite, sleep, sex interests, concentration, memory, motivation, and daily hobbies. Other items in the inventory look at self-esteem, confidence, problem-solving abilities, guilt, and whether there is suicidal ideation. There is a cutoff score in determining whether the respondent is normal or mildly depressed or moderately depressed or severely depressed. Once the person scores above mild depression, the individual should receive psychological or medical therapy.

11.5.3.5 General Screening Questionnaires for Anxiety

As may be seen, anxiety plays an important role in eating disorders and depression. Dental professionals may feel the need to be able to measure their patients' anxiety. A commonly used anxiety questionnaire is by Speilberger's [34], the State Trait Anxiety Inventory. One part of the questionnaire looks at an individual's personality trait of anxiety, that is, whether or not the individual would get anxious readily. It also measures the severity of the individual's anxiety. The second part of this test is used to investigate the individual's current state of anxiety (viz., how severe is the current situation). The scores are used to classify individuals into mild, moderate, and severe anxiety categories. Both medication and psychological therapies are appropriate and beneficial when an individual is in a severe state of anxiety.

11.5.4 Establish Antecedent, Feeling, Consequent Behavior, and Maintenance

If a patient shows symptoms of depression or anxiety or eating disorders, the dentist may choose to listen and talk with the patient about the problems bothering her/his during each dental consultation. Try to solicit information as to establish a link between an *antecedent* (condition that happens beforehand), *feelings* (causing how do they feel), the *consequent* maladaptive behaviors (e.g., drinking, or not eating, or vomiting), and *maintenance* (how the behavior is being maintained). Two examples of such a link may be found in Tables 11.3 and 11.4.

Mary's behavior is an example of how thoughts, be they ill-founded, distorted, or otherwise, may trigger sad feelings which, in turn, leads an individual to maladaptive behaviors (like bingeing).

11.5.5 What to Do with the Information

Information collected in Tables 11.1 and 11.2 is used to suggest a cause-effect link between psychology and maladaptive behavior that leads to dental problem. The dentist may use the causal link thus established to discuss with the patient the relationship between psychological issues and dental problems (e.g., tooth erosion). It becomes easier for the dentist to elaborate on how the patient might feel if the problem becomes more serious. The discussion would then lead to the efficacy of dealing with the underlying psychological problems as a means to prevent further dental deterioration. In the course of discussion, the dentist may be the first to spot the eating disorder and persuade the patient to accept referrals to her/his local clinical psychology service.

11.6 Simple Counseling Skills Using Cognitive-Behavioral Therapy (CBT) Techniques

Cognitive-behavioral therapy is the evidence-based therapy working with people who have mental health difficulties (e.g., depression, anxiety, eating disorders, and the like). Aaron Beck is the instigator of the cognitive theory that dysfunctional beliefs underpin most of the mental health problems. The emphasis of this type of therapy is an active collaboration and experimentation that both patient and therapist contribute. The therapeutic objective is to explore how to change the

Table 11.3 An example of the antecedent, feeling, behavior, consequence, and maintenance

Causal component	Nature of component
Antecedent	After eating a chocolate bar, Susan had a bloated stomach
How do you feel?	She felt being fat, ugly, and stupid
What do you do then?	She put her finger down her throat to purge
Maintaining factor	She felt better in the stomach

Table 11.4 Second example of the link between antecedent, feeling, behavior, consequence, and maintenance

Antecedent	Mary suspected that people were criticizing her
Feeling	She felt depressed and miserable
Behavior	She could not help from bingeing on crisps and pops before going to bed
Maintaining factor	She refused to meet people or go out

patient's dysfunctional beliefs without arguing with the patient or exposing the absurdity of the patient's beliefs. It is about encouraging the patient to collect evidence which may or may not support the patient's beliefs. The patient will then be able to evaluate his or her ideas in light of the hard empirical evidence.

To begin with, CBT encourages the anorexic patient to reveal her/his negative, self-defeating thoughts such as, "People are staring at me because I am so fat." Such revelation facilitates the discussion of how negative thoughts or beliefs affect the patient's moods and behavior.

The use of CBT for bulimia nervosa was pioneered by Christopher Fairburn [35] and was evaluated by his team and others [36]. His model proposes a vicious cycle, linking (a) low self-esteem, (b) misperception of body size, (c) strict dieting that ultimately breaks down, (d) bingeing, and (e) compensating behavior in vomiting.

Waller et al. [37] have developed a simplified and condensed version of CBT for use in primary care. It is administered in eight 20-min sessions. It includes the educational and behavioral components but not the cognitive restructuring part of CBT. Four general practitioners and a nurse went for two introductory training workshops. They were provided with a simple treatment manual. In a pilot study [37], 11 women with bulimia nervosa were treated, 6 improved substantially, 1 was more concerned with losing weight than overcoming the eating problem, 2 did not commit for treatment, and 2 had a comorbidity of personality disorder. Even though this is encouraging result, therapists do require more training.

However, there are a number of self-help programs and books [38–40] based on CBT for bulimia nervosa or a nonspecialist therapist guided self-help. The findings were that while those given guided self-help fared better, individuals not receiving the guidance did not.

11.7 Oral Health Education

Mistaken health beliefs could lead to unnecessary dental problems. For the general public, it is important to raise their awareness about prevention, regular checkup, and timely treatment. More needs to be done for patients with problem of depression or eating disorders. Although the general responsibilities of the patient and that of the dentist in the management of dental erosion have been discussed by Amaechi and Higham [41] and also in Chaps. 8 and 9 of this book [42, 43], eating disorder patients, in particular, should take the following precautions [41].

– When possible, "bite guards" should be worn while vomiting or purging. The inside (tooth surface) of the guard should be coated with a small amount of sodium bicarbonate powder or milk of magnesia, to neutralize any gastric acid pooling in it.

– Toothbrushing Instruction:
  (a) Use a medium nylon brush.
  (b) Do not use abrasive "whitening" toothpastes.
  (c) Brush with the Bass technique to avoid horizontal strokes.
  (d) Avoid toothbrushing immediately after each episode of vomiting or purging or bingeing on acidic food or drink; rather patients should use any of the following to freshen their mouth and wait for at least 60 min before toothbrushing:
    • Fluoride mouthwash to enhance rapid remineralization of the softened tooth surface.
    • Fluoride tablets and fluoride lozenge, which have been demonstrated as effective remineralizing agent.
    • Sugar-free lozenges or chewing gum to increase saliva flow to facilitate rapid remineralization of the softened tooth tissue, neutralize the acidity, and provide alkaline environment necessary for remineralization. Buffering capacity and bicarbonate content of stimulated saliva is higher than that of unstimulated saliva. It is also speculated that saliva stimulation would enhance the formation of acquired salivary pellicle, which has been shown to protect teeth against erosive attack.
    • Dairy products (e.g., fresh milk) have been shown to reharden softened tooth surface.
    • Sugar-free antacid tablets or a pinch of sodium bicarbonate (or baking soda) dissolved in some water may be used to neutralize the acidic oral fluid.
– Use high fluoride concentration toothpaste as well as fluoride mouthrinse for their routine daily oral hygiene practice.
– Visit their dentist regularly for professional clinical care.

These information should be provided to them with a handout on oral health (see Table 11.5) in order to remind them.

11.8 De-stigmatization of Mental Health Problems

A survey revealed that stigmatizing attitudes towards mental health problems came from distorted beliefs that mental health problems are not curable, self-inflicted, and a danger to others and that it is difficult to communicate with mental health patients. In view of the aforementioned erroneous beliefs about mental health, the Royal College of Psychiatrists [44] organized an anti-stigma campaign. Gowers and Shore [45] therefore argued for more improved training of health service staff and greater public education. They suggested that stigma can be reduced by more therapeutic encountering with mental health patients, particularly individuals suffering from eating disorders.

Table 11.5 Health education leaflets on tooth erosion

Item	Domain	Specific issue
1	*Education*	
	Diet (see Table 10.4 and Fig. 10.1)	Avoid drinking acidic juices or choose juices fortified with calcium Choose drinks with calcium (like milk) or phosphate bases
	Attitudes	Is your ideal body weight reasonable? Is there a real difference between your perceived and actual weights?
	Healthy eating	Need to maintain a minimum body mass index (BMI)
2	*Prevention and protection*	
	Patient self-care (see Chap. 8 this book)	
	Dentist-applied clinical care (see Chap. 9 this book)	
3	*Professional help*	Ask medical practitioners and pharmacologists about the side effects of prescribed medication All professionals should advise their patients to keep an eye on the process of tooth erosion and seek constant dental checkups
		Ask medical practitioners and pharmacologists about the acidity of medication

11.9 Recall, Review, and Monitor

It is important that dentists treating patients with tooth erosion take note that they seek confirmation from their medical practitioners whether their dental patients are on psychotropic medications or receiving psychological outpatient treatments and that they would persuade and refer patient with psychological issues to the specialist. It is important that the patients are followed up, monitored, and reviewed so that relapse can be spotted timely.

11.10 Summary and Conclusion

This chapter briefly outlines that tooth erosion can happen because of underlying psychological problems, namely, depression, eating disorders, and anxiety. Often dentists and general practitioners are the ones who discovered these conditions. When the dentists adopt therapeutic alliance in assessments, these patients can be approached in ways that (a) enhance the patients' insights about the cause of the dental problems, (b) make more efficacious prevention strategies, and (c) render possible further referral for psychological treatment. Confronted with dental erosions and treatment, dentists can be more aware of their role in some mental health issues. There is a growing awareness in the dental profession of the need to incorporate the behavioral sciences in the core element of their curriculum.

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