

2022

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Recommended Citation

Avramova, Nadya (2022) "Dental fear, anxiety, and phobia; causes, diagnostic criteria and the medical and social impact," *Journal of Mind and Medical Sciences*: Vol. 9: Iss. 2, Article 2.

DOI: <https://doi.org/10.22543/2392-7674.1348>

Available at: <https://scholar.valpo.edu/jmms/vol9/iss2/2>

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Dental fear, anxiety, and phobia; causes, diagnostic criteria and the medical and social impact

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ABSTRACT



Despite technological advances in modern medical science and practice, many people still associate dental treatment with unpleasant emotional sensations and pain. According to the current literature, dental fear and anxiety are psychological barriers that negatively affect frequency of patient attendance which results in avoidant behavior and poorer oral health-related quality of life.

This paper was therefore aimed at discussing basic theoretical aspects concerning diagnostic criteria, causes, and impacts of dental fear, anxiety, and phobia. Clarifying their differential diagnostic characteristics, clinical features and specific causes may play an important role in proper diagnosing, positive influencing, and management of this group of patients, thus providing the opportunity for increasing quality of dental healthcare services as well as improving patient's dental health and self-perceived quality of life.

Category: Review

Received: June 12, 2022

Accepted: August 6, 2022

Published: October 15, 2022

Keywords:

dental fear, anxiety, dental phobia, panic disorder, agoraphobia, oral health-related quality of life

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Introduction

Despite technological advances in modern medical science and practice, many people still associate dental treatment with unpleasant emotional sensations and pain. The latter are usually the most common causes of fear and anxiety in a large number of patients. Overall, four elements that are common to all fears have been identified. These are the fear of physical harm or injury, the fear of the unknown, the fear of losing control and the fear of helplessness and dependence [1]. In addition, the threshold of tolerance to pain is different for each person and at the same time is influenced by various factors, the current emotional state of the patient and others. In this aspect, clarifying the specific causes and understanding above mentioned elements of fear allows more effective planning in the treatment of patients with fear, anxiety, or dental phobia. The latter may be provoked by past experience, observation of another's reaction, rumors, etc. [2]. There are people who are afraid of dental instruments, others are afraid of needles, or their own blood [3,4]. Other causes of dental anxiety could be traumatic experiences, single events, information from relatives and friends, information

from the media, personal traits of the patient [1,5]. Fear and anxiety as an experience differ from dentophobia as they are provoked by a real, immediately present, specific stimulus. Fear overlaps with the state of anxiety but it is based more on biological reactions [6].

Different reactions to fear and anxiety have been described in the literature [7,8]:

- emotional - painful feeling of tension and anxiety.
- vegetative - dilated pupils, pale face, sweating, acceleration of respiratory rate, increased heart rate, changes in blood pressure.
- psychomotor - anxious facial expression, psychomotor agitation or vice versa, stiff position of the body on the dental chair, slightly turned to one side; mouth not opened enough, avoidance of eye contact, nervous movements of arms and legs, squeezing the back of the dental chair, etc.

As a result of the fear and anxiety experienced, some patients may become very circumstantial, to talk more than necessary (this is a reaction to relieve tension and fear), to seek contact with the dentist, which gives them a sense of security and support. In other patients, more aggressive behavior may be observed, hostile and inappropriate to the

atmosphere and attitude of the therapist. According to the current literature, fear is one of the most common reasons for many patients to delay or avoid dental treatment [9-11]. In a study conducted by Vasileva in 2018, it was concluded that dental anxiety is a psychological barrier that negatively affects frequency of patient attendance, and generally, patients with high levels of dental anxiety visit the dentist irregularly or only in case of pain [12].

This paper was therefore aimed at discussing basic theoretical aspects concerning diagnostic criteria, causes, and impacts of dental fear, anxiety, and phobia. Findings will be useful both for patients and dental professionals regarding proper diagnosing, positive influence on attendance patterns and behavioral management of this group of patients.

Discussion

According to Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) classification, anxiety disorders are separation anxiety disorder, phobic anxiety disorders, panic disorder and panic attacks, generalized anxiety disorder, etc. [13]. The current review is focused on panic disorder and phobic anxiety disorders, including dental phobia as specific type of phobia, with respect to their significance for the dental practice.

Panic disorder and panic attacks

Panic disorder is a common mental and behavioral disorder. It is characterized by reoccurring unexpected panic attacks. Sudden periods of intense fear between periods of anxiety are typical. This condition is sometimes combined with other anxiety disorders (e.g., agoraphobia). The panic reaction manifests itself suddenly with strong psychological and somatic sensations. Provoking factors (in one attack) can be stuffy room, fatigue, high alcohol intake, coffee, emotional stress. The attack usually occurs after the application of a certain stimulus. It is followed for a month (or more) by persistent concern about subsequent attacks, anxiety about the causes and consequences of the attack (loss of control, heart attack, or "going crazy"), and significant change in behavior [14].

The main manifestation of the disease is a sudden fear of death, called a "panic attack". Objects are acute diseases (heart attack, stroke) with fatal outcome. There is also objectless anxiety, in which there is discomfort and strong fear. The classic signs of panic attacks include 4 or more symptoms that develop suddenly and reach their peak in about 10-12 minutes [15]:

- Trembling, rocking sensation,
- Accelerated heart rate, sweating,
- Feeling of suffocation, pain, and discomfort in the sternum,
- Nausea, abdominal discomfort, dizziness, vertigo,
- Depersonalization, fear of going crazy,
- Fear of death, burning and tingling.

Clinical features include pronounced vegetative and conversion symptoms (headache, chest tightness). Then so-called "fear of fear" occurs - patients begin to look for a companion even to leave home. Especially in severe forms, they cannot be left unaccompanied at home. The quality of life of these patients, their social life and interpersonal relationships are significantly deteriorating. Disability occurs as a result of panic disorder [14,16,17].

Patients with panic disorder need special attention during dental encounter. The current evidence suggests extensive prevalence of oral diseases including antidepressant-induced dry mouth and periodontal disease [14,18]. In addition, there is an association between panic disorder and comorbid physical illnesses such as mitral valve prolapse and asthma [14,19]. Dentists need to consult with patient's physician regarding his/her general health condition as well as to prescribe or administer medications with caution as the latter may have an adverse interaction with the psychiatric therapy of the patient [14].

Phobic anxiety disorders

Phobia is an anxiety disorder that is provoked only or mainly by well-known situations or objects (external to the person) that do not pose a danger in real time. As a result, these situations, actions, or objects are usually avoided or visited with fear. Phobia is an excessive, illogical, irrational fear [13]. Sometimes a cause that underlies phobias can be identified at a biographical level, but in most cases, such cause cannot be found. While fears are (often) a protective mechanism against danger, phobias do not have a real risk factor, object, or situation for health or life. Classification of Phobic Anxiety Disorders according to Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) includes [13]:

Specific phobia

Anxiety is determined by a specific situation or an object that brings specific phobia closer to fear. The degree of dysfunction of professional and social functioning is important. Diagnostic characteristics are [13,20]:

- Expressed, unfounded fear, expectation of certain objects,
- Anxiety reaction is difficult to distinguish from a panic attack,
- Anxious anticipation in a certain situation disrupts daily activities.

Specific phobias can be categorized into 5 main subgroups related to [13,21]:

- Animals (spiders, insects, dogs),
- Natural environment (heights, storms, water),
- Blood-injection-injury (blood, needles, invasive medical procedures, etc.),
- Different situations (airplanes, elevators, enclosed spaces),

- Other types that cannot be assigned to the previous 4 categories.

Basic diagnostic criteria of specific phobia are [13]:

- Physical symptoms of anxiety or panic attacks in the event of phobia - palpitations, nausea, diarrhea, sweating, tremors, shortness of breath, suffocation, or dizziness,
- Tension of anticipation - anxiety about getting into a situation or a possible meeting with the object of the phobia,
- The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more,
- In children – the fear or anxiety may be expressed by crying, tantrums, freezing, or clinging.

Social anxiety disorder (Social phobia)

Social phobia (social anxiety disorder) is the fear of social situations and relationships with other people. This is the fear of situations in which the individual may be scrutinized by others. It causes feelings of inadequacy, anxiety, embarrassment, humiliation, depression. Fear arises when meeting new people, when being criticized, when being the center of attention or observed by other people, when meeting authorities or unfamiliar people, when performing in front of others. People with such a problem have incomplete social contacts, their thoughts and emotions are focused on self-observation [22,23].

Regarding dental implications of social phobia, a study of Hermesh et al. in 2015 indicated that severity of social phobia predicted the presence of oral parafunctional activity and was associated with higher risk of awake bruxism. The authors concluded that effective treatment of social phobia may mitigate bruxism and improve prognosis of psychiatric and dental patients [24]. Similarly, Bellini et al. in 2011 reported an association between bruxism and phobic symptomatology - global anxiety, agoraphobia, claustrophobia, pathophobia, and social phobia were found more frequent in bruxers as also a suffocation feeling [25].

Agoraphobia

Agoraphobia is often called "fear of open spaces" (agora in ancient Greek means square) and it is the third major group of phobias. Agoraphobia represents irrational fear or anxiety about two or more of the following situations: using public transportation, being in open spaces, being in enclosed places, standing in line or being in a crowd, being outside of the home alone [13]. The fear of those affected is that they will not be able to escape if their anxiety increases too much [26]. Sometimes the presence of a companion lowers fear. Agoraphobia is often associated with panic disorder - the fear of certain places or situations arises when patients have triggered a panic attack and thus cause fear of developing subsequent panic attacks [14,27]. It is twice as common in women.

Untreated, agoraphobia can lead to permanent confinement at home. With appropriate psychotherapy, every 9 out of 10 people with agoraphobia reach effective treatment.

Horenstein and Heimberg reviewed in 2020 the literature regarding the known associations between anxiety disorders (generalized anxiety disorder, social anxiety disorder, panic disorder and agoraphobia, dental and blood-injection-injury phobias, and illness anxiety disorder) and healthcare utilization. Although most of the studies reported increased healthcare utilization among patients with anxiety disorders, it was found also that in some cases anxiety can be associated with delayed, irregular, or inconsistent use of healthcare services [28].

Phobic anxiety disorders vary in severity, from mild anxiety to horror. Anxiety is not diminished by the knowledge that other people do not consider the situation dangerous or threatening. Phobic anxiety often coexists with depression [29,30]. Fear of certain objects, activities or situations leads to a strong desire to avoid them, and this often worsens the quality of life [13]. Affected people understand that their fear is irrational and out of real danger, but they still cannot explain or control it, they are often confused and ashamed of what is happening. The fight against phobias is aggravated by the desire to hide it from others.

More than 5-8% of the population suffers from various types of phobias, especially women than men. People with a family history of phobia are three times more likely to develop phobias than others [31,32]. The family pattern of inheritance is typical of blood phobias, injuries, injections, dentists. According to some authors, specific fears and phobias are heterogeneous in terms of gender and age distribution [33]. However, specific phobias are more common in children and usually disappear after a while. In adults, they usually start suddenly and are longer and more severe. Only 20% of phobia sufferers manage to get rid of them without timely adequate psychotherapy [34].

Dental phobia

Dental phobia or fear of the dentist is an irrational fear. The phobia causes behaviors that avoid situations that lead to strong fear - in this case situations related to teeth and their treatment [5,9]. It can coexist with panic disorder, agoraphobia, and others [35]. People who experience dental phobia spend hours thinking about their teeth or dentists, imagining the situations of the healing process. The frightened person experiences an immediate reaction to anxiety, which can take the form of a panic attack. The phobia itself causes a lot of stress and negative impact on other aspects of life. It can affect oral health. Due to the fact that sufferers exhibit avoidant behaviors towards the threatening environment, the presence of dental phobia can lead to deterioration of oral health, socialization, and quality of life of the individual [10,36]. The

problem concerns not only oral health, but also the general condition of the body:

- Chronically inflamed gums and broken teeth affect general health,
- Difficulty chewing and digesting food can cause serious digestive disorders,
- Dental problems affect speech and correct diction,
- Bad breath and smile affect self-esteem when communicating with others.

Studies have shown that dental phobia is widespread in environments where other anxiety disorders have occurred, such as generalized anxiety disorder, panic disorder, agoraphobia, etc. [35,37]. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), dental phobia is defined as persistent fear, often unnecessary or unreasonable. It is also assumed that the person does not admit to experiencing such fear, and this is manifested as a result of a protective reaction or mental disorder [13].

The main problem in determining "dental phobia" is that it is not in one form. This fear can be provoked by many causes - some rationally and others more irrationally. Whether the fear is "unacceptable", "excessive" or "irrational" is debatable. Many things are determined by whether the feeling of panic is innate or acquired. For example, a person may have fears and worries only because of stories and events of others or because of his/her own experiences in the dental office, which have not left pleasant sensations. Many people experience anxiety and fear of dental treatment, but this does not prevent them from carrying out the necessary treatment. In these cases, we cannot talk about dentophobia. In addition, available literature appears unable to capture and measure the multifaceted constructs of dental anxiety, fear, and phobia, and therefore, they tend to be used interchangeably [38]. However, there is a fundamental difference between dental anxiety, fear and dentophobia. It is expressed in the following [6,9,10]:

Dental anxiety is a reaction of unknown danger. It is extremely common, and most people experience some degree of dental anxiety, especially if they are about to have something done to them that has never been done to them in the dental office. Basically, this is the fear of the unknown.

Dental fear is a reaction to a certain danger or "I know what the dentist will do to me. I've been there before, and I've experienced it. I'm scared!" This form includes a response related to threatening stimuli.

Dental phobia is defined as a persistent, unrealistic, and strong fear of a specific stimulus, leading to complete avoidance of perceived danger. Someone with dental phobia will avoid dental care at all costs until the physical problem or psychological burden of the phobia becomes unbearable.

Moore, Brødsgaard and Birn defined in 1991 four types of dental phobia [39]:

- Fear of a specific, painful or unpleasant stimulus (needle, dental machine, certain sounds or smells),
- Anxiety from a somatic reaction (allergic reaction to local anesthesia, seizure or panic attack), anxiety to any strange and unpredictable situation,
- Disorders associated with general anxiety or multifactorial phobias,
- Lack of trust in dental staff caused by social phobias.

Other schemes for classifying dental phobia are related to the reasons for its occurrence. Here, the fear of visiting the dentist's office is divided into two types: exogenous (outside) and endogenous (inside) dental phobias. Exogenous dental phobia is defined as fear associated with traumatic dental experiences or indirect influences from significant other people and the media. Endogenous dental phobia is thought to have originated from other anxiety disorders or is based on factors such as heredity and personality traits [5].

Certain facts, events, previous experiences, anatomical and physiological features of the maxillofacial area, reduced pain threshold, individual features of the central nervous system, can trigger the appearance of dentophobia [9,40,41]. The specific causes of dental phobia could be represented by [42]:

Bad dental experiences - this includes not only a painful visit, but also humiliating behavior demonstrated to the patient.

Past violence - dental phobia is present in people who have had physical and/ or sexual violence in the past, especially as children. Physical and emotional abuse by a person with a prominent position in society, along with bad experiences with the dentist, can be a severe cause of dental phobia.

A negligent dentist - this means a dentist who has caused pain or damage to a tooth of the patient. This memory can maintain a constant level of tension.

Humiliation - the dentist was tactless and spoke sharply about the dental status or the patient's hygiene. The remark turned out to be decisive and the patient was afraid to visit a dentist so as not to experience such humiliation again.

Family history of dental phobia - when a child grew up in an environment where one parent had dental phobia, there is a real danger that the child will experience the same problem. When the child is surrounded by relatives and acquaintances who tell horrifying stories about their experiences in the dental office, this child very easily develops dental phobia.

Genetic predisposition - many people for centuries are born ready for a type of phobia. They quickly learn to experience phobias of snakes, insects, phobias of needles, knives. All this happens as if inherited, encoded by the genes that carry it.

Post-traumatic stress - according to several studies, people who have experienced unexpected experiences during dental treatment, such as obsessive thoughts or shocking feelings, also develop dental phobia. This condition has been described in the literature as Posttraumatic Dental-Care Anxiety (PTDA) [43].

Who is affected by dental phobia?

Everyone could be affected by dental phobia! It does not matter what age, gender, or social status [44].

Diagnostic features:

- Expressed, unfounded fear in anticipation of dental treatment,
- Severe anxiety when entering the dental office,
- Anxiety about impending painful treatment,
- Anxiety reaction with characteristics of a panic attack,
- Anxious anticipation disrupts daily activities,
- Avoiding behavior when dental care is needed,
- Severely deteriorated dental status due to above mentioned reasons.

Clinical symptoms:

- Physical symptoms of anxiety or panic attacks - palpitations, rapid heartbeat, nausea, diarrhea, sweating, tremors, shortness of breath, feeling of suffocation or dizziness,
- Tension of anticipation - anxiety from getting into the dental office, possible meeting with the dentist and subsequent treatment.

According to Jeddy et al. in 2018, pain and extraction are the most common procedures inciting duress and anxiety. Along with nature of the dental procedure planned, the authors revealed age, gender, level of education and frequency of dental visits as being the most influencing factors and having a direct effect on the patient's state of mind and anxiety [40].

Conclusions

Dental fear, anxiety and phobia represent a serious problem even in contemporary dental practice. Having been determined by a variety of causes, they could significantly interfere with the daily activities of the dental professionals. Moreover, patients with higher dental anxiety and phobia are more likely to avoid dental treatment, which results in poorer oral health and associated quality of life.

Therefore, clarifying the characteristics of differential diagnostic, clinical features and specific causes of dental fear, anxiety and phobia may play an important role in proper diagnosing, positive influencing, and management of this group of patients, thus providing the opportunity for increasing quality of dental healthcare services as well as improving patient's dental health and self-perceived quality of life.

Highlights

- ✓ Clinical features and implications of panic disorder and phobic anxiety disorders (specific phobia, social anxiety disorder, and agoraphobia) are described.
- ✓ Types, diagnostic characteristics, clinical symptoms, and specific causes of dental phobia are presented with respect to its relevance to dental practice.
- ✓ Dental fear, anxiety, and phobia are discussed and presented in differential diagnostic aspect.

Conflict of interest disclosure

There are no known conflicts of interest in the publication of this article. The manuscript was read and approved by all authors.

Compliance with ethical standards

Any aspect of the work covered in this manuscript has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

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