Explanatory Models of Dental Anxiety

Corina Ion Goreac

Titu Maiorescu University, Bucharest, Romania

Petre Traian Roşu

Titu Maiorescu University, Bucharest, Romania

Abstract

Experiencing an anxiety disorder or just some anxiety symptoms is often associated with a significant decrease in quality of life and in social and professional functioning of individuals. People who have anxiety disorder are registered with multiple days of incapacity for work and show a high frequency of dependence on financial aid in different forms. Dental anxiety is caused by a variety of genetic, behavioral and cognitive factors. When genetic vulnerability is considered, it seems that dental anxiety reported in patients appears as an inheritance of vulnerability factors which predispose to anxiety in general, and specific phobia in particular. Individuals with dental anxiety do not directly inherit phobia itself, but genetic vulnerability factors can interact with other etiological elements that cause anxiety. The theory of the phylogenetic origin of fear is controversial and it has been suggested that although genetics can predict several factors related to dental fear, it does not seem to be closely related to the development of the anxiety dental symptoms.

Keywords: *dental anxiety, classical conditioning, psychology of dental fear, symptoms, hypnotherapy interventions*

Corresponding author: Corina Ion Goreac, Petre Traian Roşu

Phone number: -

E-mail address: corina_ion_goreac@yahoo.com; rosupetretraian@gmail.com

I. INTRODUCTION

Experiencing an anxiety disorder or just some anxiety symptoms is often associated with a significant decrease in quality of life and in social and professional functioning of individuals. People who have anxiety disorder are registered with multiple days of incapacity for work and show a high frequency of dependence on financial aid in different forms (Lecrubier, Wittchen, Faravelli, Bobes, Patel, & Knapp, 2000).

On the other hand, anxiety tends to reduce, for example, the quality of life in the case of patients suffering from chronic somatic disease (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007).

Dental anxiety is caused by a variety of genetic, behavioral and cognitive factors (Klingberg, & Broberg, 2007). When genetic vulnerability is considered, it seems that dental anxiety reported in patients appears as an inheritance of vulnerability factors which predispose to anxiety in general, and specific phobia in particular. Individuals with dental anxiety do not directly inherit phobia itself, but genetic vulnerability factors can interact with other etiological elements that cause anxiety. The theory of the phylogenetic origin of fear is controversial and it has been suggested that although genetics can predict several factors related to dental fear, it does not seem to be closely related to the development of the anxiety dental symptoms (Nesse, 1994).

Dental interventions may include very powerful primary stimulus through the instruments that the dentist uses and invades the patient's space, instruments which cause pain. Thus, the human species is more "prepared" to acquire fear reactions to stimulus which represented a certain danger to our predecessors (May, 1996). Dental anxiety may be part of the evolutionary stage that aims to protect the body from foreign objects intrusion.

II. CLASSICAL AND OPERANT CONDITIONING IN DENTAL ANXIETY

Classical conditioning refers to the process in which a prior neutral stimulus acquires the ability to produce a response by associating itself with another unconditioned stimulus that produces this answer (Mineka, & Oehlberg, 2008). For example, an individual undergoing a painful procedure (with an unconditioned response of anxiety/fear) during a dentist visit may receive a conditioned association between dentist (conditioned stimulus) and anxiety/fear (conditioned response). The representation of the conditioned stimulus (the dentist or the associated stimuli) becomes capable of triggering the anxiety conditioned response during the upcoming session at the dentist.

Operant conditioning is described as the process in which the frequency of a particular behavior (operant) is modified by the consequences that follow the behavior (Carter, Carter, Boschen, AlShwaimi, & George, 2014). Certain behaviors can be "reinforced" (increase in frequency) by association with positive consequences (positive reinforcement) or removing the negative consequences (negative reinforcement). Alternatively, behaviors can be "punished" (reduced in frequency) if they lead to negative consequences (positive punishment) or if positive consequences are removed (negative punishment). The positive punishment processes (e.g. the pain and anxiety that occurs during a visit to the dentist) and negative reinforcement (e.g. reducing the anxiety that occurs when the individual avoids the dentist) is the most important also when it comes to the acquisition and maintenance of dental anxiety.

Is has been identified that many cognitions are important in acquiring and maintaining anxiety disorders, including specific dental anxiety. These can be negative thoughts about predicting the future (e.g. "Definitely he will hurt me, the dentist") and the severity of negative outcomes (e.g. "The pain will be overwhelming"). In addition, individuals may have beliefs about their inability to cope with a negative result ("Dentist's pain, it will be unbearable").

III. THEORETIC MODEL OF DENTAL ANXIETY

Berggren's 1984 model states that patients with dental anxiety postpone treatment, leading to a damage in dental status and consequently to a continuous negative reappraisal of the dental situation (Berggren, & Carlsson, 1984; De Jongh, Schutjes, & Aartman, 2011).

A qualitative study conducted by Armfield, Stewart, and Spencer (2007) highlighted the role that "shame" plays in dental anxiety. Patients are so ashamed of their poor oral health that they avoid going to the dentist not to receive reproaches. Thus, these patients only reach the dentist in emergency situations, when an unbearable pain or serious infection occurs. Studies have proved that, although these patients have been making appointments, they did not respect them or chose to cancel prematurely for fear.

Understanding the complex psychology of dental fear is essential for the prevention and treatment of dental anxiety (Girdler, & Smith, 1999).

Armfield in 2010 has suggested a model of the etiology of dental anxiety in which cognitions, more than experiences, are the main element in acquiring and expressing fear. Thus, patient's perception of the situation is crucial in the etiology of fear. In particular, there are factors that create a strong sense of vulnerability: the perception of lack of control, unpredictability, danger. According to cognitive theory, perceptions of vulnerability are considered to be included in a cognitive schema that filters information and guides experiences, beliefs, emotions, and behavior. The person becomes involved in a situation having a pre-

existing schema which is useful to model the behavior, the psychological and physiological experience of the situation.

When it is discussed the cognitive model, it seems that for the patient who has to cope with a stimulus or dental condition will appear an automatic and preconscious reaction that causes the fight or flight response. Both the automatic affective response to the dental condition and the overall assessment determine a number of physiological, behavioral and emotional reactions that include: nervousness, panic, physiological reactions such as sweating, the desire to escape the situation, catastrophic thoughts, excessive concern, etc. The experience of visiting the dentist along with associated perceptions and emotions leads to a feedback within the vulnerability schema, affecting continuous exposure to anxiety stimulus and causing future avoidance reactions.

For some individuals, fear of dental treatment can be so high that it affects their normal lives and leads to avoidance behaviors, associated with significant levels of distress and disruption of functionality (Atherton, McCaul, & Williams, 1999). Knowing the etiological and maintenance factors of dental anxiety can help dentists and researchers design specific interventions in order to reduce avoidance behavior. In addition, population dental health will be improved.

Mehrstedt, Tönnies, and Eisentraut, (2004) noticed that dental anxiety was negatively related to quality of life, psychological well-being, social functioning and vitality. Recent Scandinavian studies have reported also a vicious circle of dental anxiety: fear and avoidance lead to premature cancellation of dental appointments, which leads to worsening health.

The General Dental Council Guidelines state that: "Dentists have the duty and patients have the right to control pain and anxiety [...] when helping a patient, all aspects of behavioral management must be considered before prescribing or undergoing treatment" (1997).

A number of techniques and methods are available to help control anxiety or dental phobia. These can be applied according to the training, either by the dentist or by a psychologist who can form an interdisciplinary team with the first. The techniques approached will be individualized on a case-by-case basis.

Some of these techniques include: conscious (procedural) sedation such as inhalation, intravenous or oral (Averley, Girdler, Bond, Steen, & Steele, 2004), general anesthesia (Vermeulen, Vinckier, & Vandenbroucke, 1991), psychological techniques that aim to build confidence on patient-dentist team (Tvermyr, Hoem, & Elde, 2012), behavioral techniques (Bochner, 1988), techniques of systematic desensitization, hypnotherapy interventions (Crăciun, & Holdevici, 2013; Holdevici, Crăciun, & Crăciun, 2013).

References

Armfield, J. M. (2010). Towards a better understanding of dental anxiety and fear: cognitions vs. experiences. *European journal of oral sciences, 118*(3), 259-264.

Armfield, J. M., Stewart, J. F., & Spencer, A. J. (2007). The vicious cycle of dental fear: exploring the interplay between oral health, service utilization and dental fear. *BMC oral health, 7*(1), 1.

Atherton, G. J., McCaul, J. A., & Williams, S. A. (1999). Medical Emergencies: Medical emergencies in general dental practice in Great Britain Part 2: drugs and equipment possessed by GDPs and used in the management of emergencies. *British dental journal, 186*(3), 125-130.

Averley, P. A., Girdler, N. M., Bond, S., Steen, N., & Steele, J. (2004). A randomised controlled trial of paediatric conscious sedation for dental treatment using intravenous midazolam combined with inhaled nitrous oxide or nitrous oxide/sevoflurane. *Anaesthesia, 59*(9), 844-852.

Berggren, U., & Carlsson, S. G. (1984). Psychometric measures of dental fear. *Community Dentistry and Oral Epidemiology, 12*(5), 319-324.

Bochner, S. (1988). Social Psychology and Patient Management. In *The Psychology of the Dentist-Patient Relationship* (pp. 91-136). Springer, New York, NY.

Carter, A. E., Carter, G., Boschen, M., AlShwaimi, E., & George, R. (2014). Pathways of fear and anxiety in dentistry: A review. *World Journal of Clinical Cases: WJCC, 2*(11), 642.

Crăciun, B., & Holdevici, I. (2013). *The Role of Hypnosis in Reducing Anxiety, Pain and Cognition Disorders in Patients with Dental Problems*.

De Jongh, A., Schutjes, M., & Aartman, I. H. (2011). A test of Berggren's model of dental fear and anxiety. *European journal of oral sciences, 119*(5), 361-365.

Girdler, N. M., & Smith, D. G. (1999). Prevalence of emergency events in British dental practice and emergency management skills of British dentists. *Resuscitation, 41*(2), 159-167.

Holdevici, I., Crăciun, B., & Crăciun, A. (2013). Using Ericksonian hypnosis techniques at patients with dental problems. *Procedia-Social and Behavioral Sciences, 84*, 356-360.

Klingberg, G., & Broberg, A. G. (2007). Dental fear/anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. *International Journal of Paediatric Dentistry, 17*(6), 391-406.

Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety Disorders in Primary Care: Prevalence, Impairment, Comorbidity, and Detection Anxiety Disorders in Primary Care. *Annals of internal medicine, 146*(5), 317-325.

Lecrubier, Y., Wittchen, H. U., Faravelli, C., Bobes, J., Patel, A., & Knapp, M. (2000). A European perspective on social anxiety disorder. *European Psychiatry, 15*(1), 5-16.

Maintaining standards: guidance to dentists on professional and personal conduct. *General Dental Council, 1997*.

May, R. (1996). *The meaning of anxiety*. WW Norton & Company.

Mehrstedt, M., Tönnies, S., & Eisentraut, I. (2004). Dental fears, health status, and quality of life. *Anesthesia progress, 51*(3), 90.

Mineka, S., & Oehlberg, K. (2008). The relevance of recent developments in classical conditioning to understanding the etiology and maintenance of anxiety disorders. *Acta psychologica, 127*(3), 567-580.

Nesse, R. M. (1994). Fear and fitness: An evolutionary analysis of anxiety disorders. *Ethology and sociobiology, 15*(5-6), 247-261.

Tvermyr, K., Hoem, A. F., & Elde, K. M. (2012). *Clinical management of the adult patient with dental anxiety* (Master's thesis, Universitetet i Tromsø).

Vermeulen, M., Vinckier, F., & Vandenbroucke, J. (1991). Dental general anesthesia: clinical characteristics of 933 patients. *ASDC Journal of dentistry for children, 58*(1), 27-30.