

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service Available Online at: www.ijdsir.com

Volume – 3, Issue – 3, June – 2020, Page No. : 566 - 573

Recent Methods of Anxeity Control in Oral and Maxillofacial Surgery, Updated Review.

¹Ahmed Wallan AlAhmary, Assistant Professor, Department of Oral & Maxillofacial Surgery, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

²Nasser Nasser Almutairi, BDS, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

³Mohammed Faisal Alnaim, BDS, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

⁴Saud Fahad Alamani, BDS, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

⁵Sami Tirad Alanazi, BDS, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

Corresponding Author: Ahmed Wallan Al Ahmary, Assistant Professor, Department of Oral & Maxillofacial Surgery, AlFarabi Colleges of Dentistry and Nursing, Riyadh, Saudi Arabia.

Citation of this Article: Ahmed Wallan AlAhmary, Nasser Nasser Almutairi, Mohammed Faisal Alnaim, Saud Fahad Alamani, Sami Tirad Alanazi, "Recent Methods of Anxeity Control in Oral and Maxillofacial Surgery, Updated Review. ", IJDSIR- June - 2020, Vol. – 3, Issue -3, P. No. 566 – 573.

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Type of Publication: Review Article Conflicts of Interest: Nil

Abstract

Dental anxiety can be considered as one of the most challenging problems that can face both dentists and dental patients. This review aimed to summarize physiology, etiologies, and management methods of dental anxiety in dental surgery. This condition can prevent the patient from seeking dental treatment, with subsequent substantial distress and oral health impairment. Dental anxiety is multifactorial, as these factors can be related to pain, previous dental history, and the nature of the dental procedure itself. It is important to identify the etiology and the nature of this anxiety to allow the management of such conditions in a proper way. It was concluded that successfully managing dentally fearful patients is achievable for dentists but requires a greater level of understanding, good communication, and a phased treatment approach. And this can be approached in several ways including both behavioral and pharmacological methods.

Keywords: Anxiety, Dentistry, Surgery, Pain, Behaviour **Introduction**

Defining anxiety takes into consideration a behavior that is complicated possibly due to its association with physiological activation that found to be triggered by internal stimuli, such as cognitive and somatic, as well external ones, for instance, environmental reasons. It has been reported that patients have been experienced this complex behavior rottenly before, throughout, or evenly in both times of dental treatment.[1, 2]

Corresponding Author: Ahmed Wallan Al Ahmary, ijdsir, Volume – 3 Issue - 3, Page No. 566 - 573

Dental anxiety is an important, if not the major, component of distress to patients in the dental operatory. Epidemiological studies suggest between 3% and 20% of the population have levels of fear and anxiety about dental treatment in anxiety. Specific procedures or steps in dental treatment that is considered to be problematic. Anxiety and the fear of pain keep patients from seeking dental care. This is strongly associated with the deterioration of oral and dental health.[3]

Over recent decades, the everyday clinical practice of dentistry has benefited from major advances in techniques, technologies, and materials, At the same time, public awareness of oral health has improved. Despite these gains, anxiety related to the dental environment and specific dental treatments is a problem suffered by many patients worldwide, and it remains a significant challenge in providing dental care.

This review is aimed to summarize physiology, etiologies, and management methods of dental anxiety in dental surgery.

Pathophysiology of dental anxiety

The frequency of medical emergencies in the dental setting is not uncommon and varies from 0.7 – 10 cases per dentist per year [4]. Most of them are not disease-related, with vasodepressor syncope being the most frequent one, followed by orthostatic hypotension, hypertension, and hyperventilation [5]. Anxiety and discomfort during dental treatment may activate physical changes that are part of the so-called fight-or-flight response and may result in emergencies [6]. According to the theory of fight or flight, the first response to danger includes a sympathetic activation that triggers the fight-or-flight response, providing the body with a burst of energy so that it can respond to perceived dangers[7, 8]. This affects many organs and systems (including the central nervous system, cardiovascular system, endocrine, and

immune system, and skeletal muscles) and results in subtle physiological and psychosomatic changes by releasing multiple chemical mediators and neurotransmitters such as epinephrine and norepinephrine [9, 10]. As epinephrine circulates through the body, it brings on several physiological changes called centralization of the circulation, increase in blood pressure, heart rate, and respiratory rate. Small airways in the lungs open wide. This way, the lungs can take in as much oxygen as possible with each breath. Extra oxygen is sent to the brain, increasing alertness. Sight, hearing, and other senses become sharper. Meanwhile, epinephrine triggers the release of blood sugar (glucose) and fats from temporary storage sites in the body to ensure adequate supply to the heart, brain, lungs and skeletal muscles, which facilitate actions required in fighting or escaping. It represents the condition in the dental clinic of patients when they feel threatened by the dentist [9, 10].

In the dental clinic, fighting can now take the form of anger while flight can take the form of a vasodepressor syncope, the most common medical emergency in the dental office [11]. The syncope has become more prevalent today as stress reactions are usually prompted in settings (like dental clinic) where fighting for welleducated adults is considered inappropriate. It should be understood that children are less likely to undergo any syncope with vasodepressants because, if are any, they are more likely to fight with the dentist [9, 10, 12].

The ability for our consciousness also activates some neurobiologically defined prosocial protective responses, depending on the perceived environment, and explains why we may react in different ways in similar circumstances.

Many patients may develop dental anxiety or phobia as a result of many reasons, such as previous negative medical/dental conditions or relationships with a dentist [13, 14].

Pain is another key factor related to anxiety and dental emergency [15]. Pain is a dynamic physiological condition which relies on a wide range of factors and can be categorized in various ways, such as acute, chronic, incidental procedural, etc. procedural pain experienced by patients undergoing medical/dental procedures is an important and common cause of anxiety, stress, fight-orflight reactions, and syncope. Anxiety and pain are therefore two associates who have often existed in real life, as well as in dental and medical treatment [16-18].

Etiologies of dental anxiety

Fear of Pain : Fear of pain has been linked strongly to the development of dental anxiety and avoidance of dental treatment. Studies by Kent indicate that memory of dental pain is "reconstructed" over time. He found that highly anxious patients tended to overestimate the pain they would feel before dental procedures, and also overestimate the pain experienced.[19] The time spent waiting for dental treatment is cited commonly by patients as being anxiety-provoking, as it increases the time to think about what will (or could) happen, and to ponder the worst-case outcomes.[19]

Previous Negative Experiences: These negative experiences may be attributed to pain and discomfort felt during the procedure and/or in the postoperative period, as well as to an unconstructive patient-dentist relationship experienced at a previous dental visit.[20] Concerning patient-dentist interaction, for instance, patients who felt disregarded or inadequately cared for during previous dental visits may have increased anxiety.[20]

Verbal threat: Rachman (1977) proposed a second indirect pathway to phobia acquisition referred to as "verbal transmission". In this process, the individual acquires a fear or phobia through learning about the

dangerousness of a situation from others without observing it directly. In dental phobia, for example, an individual may hear stories from others about traumatic or painful experiences that they have had during dental treatment, which may lead to a learned fear of dental procedures [21]

Surgery and Dental Extraction: were reported as the most scaring procedures, with a strong statistical relation with dental anxiety. When investigating factors of fear within the different types of dental procedures: 93.4% mentioned pain; 71.4% were afraid to lose control; 65.1% said they feared to acquire an infectious disease, and 63.4% were afraid of post-operative complications.[22] From the study sample,57.1% claimed they were calm while waiting for their turns, 35.5% admitted to being anxious, and only 7.4% were terrified (had symptoms that ranged from nausea to fainting) in the waiting time.[22]

Vicarious: In addition to direct contributors to phobia acquisition, Rachman (1978) proposes that individuals may also acquire phobic responses indirectly. One such pathway has been called vicarious experience or vicarious conditioning. In vicarious conditioning, the individual acquires a fear response by seeing the fearful experience of others. In dental phobia, for example, a child who observes a fear response of a parent attending the dentist may learn indirectly that the situation poses a significant threat.[21]

Management of dental anxiety: 4.1 - Behavioral (nonpharmacological) management

In dentistry, anxiety and fear from the dental procedure are normal in patients especially in those who undergo a surgical procedure. Seeing a needle, sound of hand-piece, blood, and fear from losing the tooth may panic the patient and increase anxiety. Bad dental surgical experience for patients may also be a reason for their fear of the next dental surgical treatment. Some patients may feel anxious

due to fear of perceived problems such as getting numb, low pain threshold, or issues in trusting the dental practitioner [23]. Knowing the reason for the fear in patients who are undergoing the dental surgical procedure will help the dentist prevent them from being anxious and will help to solve the problem and having them treated effectively. Children are more anxious than adults during their first dental experience and seeing new instruments that they have never seen. Anxiety can be controlled in several ways, one of which is the nonpharmacologic way. A nonpharmacological way of controlling anxiety is the first way that has to be done with patients. Some researches mentioned good results in dealing with anxious patients who are undergoing the dental surgical procedure in non-pharmacological ways. The non-pharmacological ways for reducing anxiety in patients who are undergoing dental surgical procedures are safe and may never harm the patient. Patients usually feel safe and secure when their anxiety is treated with non-pharmacological ways.

To reduce anxiety in patients, a trustful relationship between dentist and patient have to be in place, whereby:

1- The dentist has to reassure the patient that nothing will happen wrong and against their wishes.

2- (Tell-Show-Do) is one way that makes the patient comfortable and gives trust.

3- Keep the patient informed about what you are doing right now.

Pharmacological management

Related to these points in how to ensure and reduce patient anxiety, patient in a relaxed stage, undergo treatment more effectively form anxious patients. Leaving patients interrupting treatment TEMPIRORLY by hand signs "stop-start" is important [24]. In the surgical procedure, the dentist may ask the dental assistant to place the instrument in a place where the kit is blocked form view or covered form the patient [25]. Some patients, when distracting them by music or VR (Virtual Reality) glasses, may reduce their anxiety and make them feel comfortable and happy during any dental treatment [25]. Video-tape behavioral intervention is another way to reduce anxiety in patients undergoing a dental surgical procedure [26]. In this experiment (VR Glasses), patients are administered to a video-tape for 25min before the procedure. Moreover, the video provided some information about fear and behavioral intervention that are effective in reducing anxiety and pain during and after the dental surgical procedure [26]. In some patients, distracting them while treatment is effective with them [27]. Also, those patients won't feel pain or even won't be aware of pain. The dentist can play videotape cartoons, audiotape story or video games to the patient to distract him/her while having the patient in the dental chair [27]. Audiotape distraction method is more effective than videotape or games in patients because it makes the patient close his/her eyes while listening to the audiotape and trying to focus and imagen the story and enjoying it[27]. In children's patients, the dentist can give positive rewards to take control of the child during treatment and even increase their behavior by giving them for example stickers [27]. A sticker may let the child be patient, cooperative, happy, and even feel strong after the treatment. Relaxation training is also one of the effective ways to reduce anxiety in patients during the dental surgical treatment. This method (Relaxation training) is most effective in adults more than children due to the need for paying attention to instructions for a long time. Most relaxation techniques do involve other elements known to reduce anxiety such as cognitive avoidance and distraction [27].

Dentistry has been closely associated with anxiety, fear, and pain which possibly arise from previous negative experiences probably during childhood or acquired from anxious family members or an existing chronic gum or

teeth problem. Thus, knowing the patient source and level of anxiety can enable the dentist to decide on a proper treatment plan. Currently, in research, there are two treatment plans which have been proposed for dental anxiety a non-pharmacological interventions and pharmacological ones. Non- pharmacological interventions involve communication skills, behavior modification techniques, cognitive behavioral therapy, and [28] physical restraints. However, our concern in this part is pharmacological interventions.

Pharmacological interventions involve, mainly, using sedatives such as nitrous oxide, Tranquillizers, Narcotics. Nitrous oxide considered a gaseous sedative agent that is supposed to produce moderate sedation which reported to effects dental anxiety by several authors [29-31]. Its main advantage related to the lack of prolonged effects after the treatment session. Other advantages relying on the patient's ability to proceed with its normal activities immediately [32]. Its importance can be maximized by using as an adjunct to other forms of sedation in the early stage or even at the end stage of a treatment procedure to prolong the working time available subsequently that treatment can be completed before the effects of oral or parenteral medications disappeared [30, 33]. Nevertheless, its usage is limited to patients with mild to moderate levels of anxiety for nitrous oxide and not applicable to the highly anxious patients [30].

Secondly, Tranquillizers which has been reported to be applicable in generating light sedation for dental patients and affects possibly behavior and nervous system. In the same category is Promethazine which is the least likely to produce an annoying effect [34]. Other examples are involving Phenothiazine, which is antihistaminic which makes it a good choice for atopic patients as well as a good choice to pair with nitrous oxide. Another group of tranquilizers is Benzodiazepines which activate the central nervous system by binding with GABA receptors function by binding with benzodiazepine receptors thereby activating GABA and then eventually inhibiting the nerve impulse [35]. Therefore, this classified them as an effective producer of sedativehypnotic effects for dental treatment. It is also causing mild muscle relaxation and have anticonvulsant properties.

Diazepam is another agent from the tranquilizer family and known to have a wide safety margin with relatively few side-effects [36]. One of its metabolites, N-desmethyl diazepam is pharmacologically active and has a long halflife and thus takes a long while for full alertness to be recovered following drug administration. However, Diazepam is known to make some children excitable, so its effects are not entirely predictable [37]. Midazolam, another agent from the same classification, has almost replaced diazepam which is known to be slightly a more rapid onset of action than diazepam. Midazolam has the advantage of rapid absorption directly into the systemic circulation from an area rich in blood supply without the disadvantage of passing through the portal circulation [38]. However, it has been reported that is not well tolerated by children [39].

The third group involves the use of Narcotics which has been reported to have an analgesic property, in addition to being anxiolytic, through the depression of the cerebral response to pain. They also produce euphoria and deep sedation. However, these agents often need to be used in combination with another drug to potentiate their action. Ketamine is one example of this group which is a phencyclidine derivative. Ketamine may be used in combination with a benzodiazepine such as midazolam to achieve sedation for a painful procedure.

The use of ketamine in combination with midazolam appears applicable due to the following reasons:

1- Both drugs have sedative and amnesic properties

2 -Ketamine adds an analgesic component

3- Midazolam counteracts the psychic side-effects of ketamine and

4-Ketamine counteracts the depressive effect of midazolam (which is the reduction of average blood oxygen level) on vital body function [40].

Other than Ketamine is meperidine, Chloral hydrate, and Propofol are known to be alternative narcotic agents.

Conclusion

In conclusion, the prevalence of dental anxiety is significant and considered a challenging problem both for dentists and patients, which can be an obstacle to the patient to seek dental care and a source of frustration and additional stress to the dentist. The consequences of postponing and avoiding professional care can affect overall oral health and quality of life. Elimination of such anxiety is very important and can be accomplished, with varying degrees of success, via non-pharmacological and pharmacological methods.

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