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**EMOTIONAL AND BEHAVIORAL REACTIONS ARE A
MANIFESTATION OF PROTECTION IN CHILDREN WHEN
VISITING A DENTIST**

Axatov Alijon Jamshidovich

Ortikova Nargiza Khairullayevna

Samarkand State Medical University, Samarkand, Uzbekistan

Abstract: *Fear and anxiety are conditions that contribute to survival in an evolutionary context. Various cognitive, neurobiological, emotional and behavioral responses are triggered when confronted with a dangerous situation and these reactions allow us to protect ourselves. Our focus is on danger and the body is preparing for a "fight" or "flight" (the hormone adrenaline is released to increase strength and endurance, the heart beats faster to pump blood into the main muscle groups, the body begins to sweat, to maintain optimal temperature). Although these "survival reactions" are useful in situations where there is a real danger, in cases where there is no real threat, instinctive fear reactions do not help and can increase distress. For example, children begin to worry because they do not understand what is happening to them. Therefore, the first thing practicing dentists can do to support anxious patients is to explain the essence of the fear response and normalize feelings of anxiety.*

Keywords: *Anxiety and fear, negative consequences, oral health.*

Although the terms "anxiety" and "fear" are often used interchangeably, fear has been described as a reaction to the immediate, and anxiety - to the potential danger. The fear response is associated with a surge in the arousal of the autonomic nervous system (protective actions). It has been suggested that anxiety is a much more complex state and is characterized by a feeling of helplessness, an inability to predict or control upcoming situations and state willingness to counter possible future threats. Anxiety responses include anxiety, increased alertness, cognitive distortion, agitation of the autonomic nervous system, and avoidance

behavior. Dental fear is associated with reactions to stimuli, which are perceived as threatening (for example, a turbine tip with boron), and dental anxiety - as a state of fear (for example, thoughts that something terrible should happen), which is observed even before the doctor's visit. In clinical situations, it is difficult to distinguish between dental anxiety and fear. In addition, children may experience different combinations of anxiety and fear reactions. Therefore, in children, the term "dental fear and anxiety" is used to describe negative feelings associated with visits to a dentist.

Dental phobia (dentistry, dentophobia) is a severe form of CSS and is characterized by the presence of excess CSS for at least 6 months, during which dental care is actively avoided.

SSB has negative consequences for the oral health of children. These children have worse oral health than their peers (e.g., no more carious lesions treated).

Without treatment, caries can lead to complications, and therefore children with CSS are more likely to experience toothache.

Since children with CSS avoid dental treatment, caries progress to such an extent that often the only appropriate treatment option is tooth removal. This may partially explain why there is an increase in the number of missing teeth.

Some children with SSB may experience behavioural problems (e.g., "struggle" response) that may disrupt delivery and adversely affect the quality of dental treatment. Children who have behavioural problems are twice as likely to develop dental caries at 5 years of age as children without behavioural problems and it is more likely that restorative treatment will be completed and will require local anesthesia.

Anxiety experienced by children not only affects the child, but can also be a potentially stressful and frustrating experience for parents and caregivers. First, it may be a problem for parents to convince child with SSB to visit a dentist. In addition, watching a child get scared while in a dental clinic can be a stressful situation for parents.

Treating patients with SSB can cause various difficulties and problems for dentists. Treatment of patients with a high level of anxiety can take a long time and cause stress in the doctor.

Dentists may also be hesitant to provide dental treatment to a patient with CSS due to concerns that they may worsen the condition of the child or because they do not know how to effectively cope with the psychoemotional condition of such patients. There are also financial consequences of treating children with CSS - dental treatment in children with anxiety may take longer, and missed and canceled appointments will have a financial impact on dental practice.

Children in the study populations were between the ages of 4 and 18 years, studies were conducted in developed countries. In cases of child self-reports alone, the average prevalence ranged from 12 to 17%.



In 2013, the UK Child Health Survey included a standard version of the Modified Dental Anxiety Scale (MDAS). MDAS includes five elements for measuring anxiety when visiting a dentist (eg, tomorrow's dental treatment, being in the waiting room), dental treatment (eg, tooth drilling and filling polishing), and local anesthesia. High SSB (total MDAS score ≥ 19) was identified in 14% and 10% of respondents aged 12 and 15, respectively, while more than half of participants (62 and 54% aged 12 and 15) were identified with moderate SSB levels (overall MDAS score = 10-18).

Fears and anxieties are part of the normal development of the child, and, as a rule, fears and anxieties of development are transient. However, for some children, dental fears and anxieties do not pass and become constant and problematic. There are many different mechanisms that have been proposed to explain the development of SSB in children; however, there is general agreement that the etiology of pediatric SSB is multifactorial. Exogenous sources of SSB are external factors that include direct experience (e.g., traumatic) and indirect experience (indirect information). Endogenous sources of CSB are internal factors that make people susceptible to the development of dental anxiety.

Rachman S. proposed a mechanism for the acquisition of fear based on three ways: the result of direct experience, indirect through indirect modeling and through the impact of threatening information.



The first way suggests that SSB may develop as a result of negative experiences. The negative experience of past treatment can be divided into four categories: pain or feeling helpless, problems with the behavior or personality of the dentist, serious treatment failures or clinical errors and feelings of embarrassment. A neutral stimulus (dentist) becomes associated with a negative experience, such as pain. Pain naturally causes a fear reaction, and therefore a painful dental procedure will be considered as an "unconditional incentive," and

the resulting fear as an "unconditional answer." As a result of classical conditionality, the dentist begins to associate with this painful experience. Thus, the dentist becomes a "conditional stimulus," which can cause a conditional reaction of fear. If patient-dentist interactions involve any negative stimuli that lead to fear (e.g., loss of control, pain, shame, embarrassment, criticism), then there may be a link between dentist visits and exposure to these negative stimuli.

The vast majority of children suffer from acupuncture and are concerned about feeling pain during oral injection. Especially, palatine injections cause CBS.

Children report experiencing pain in dentist, restorations and other procedures; or that the treatment was not stopped, or they were not given a local anesthetic, or did not wait for it to take effect. Perhaps they were not believed, which clearly aggravates the situation and causes distrust of dentists.

Stimulus generation may also occur when children become afraid of the additional stimuli they associate with the original conditional stimulant. For example, in addition to their fear of the dentist, the patient may begin to fear other objects/situations that they associate with the dentist, such as a dental chair or the smell of a dental clinic. Although reports of past trauma are subjective, this perception is identified as the most important in the way of SSB formation.

However, not all children, with negative dental experience, develop SSB. The Davey G. latent inhibition hypothesis suggests that people who undergo a series of painless appointments with a doctor before they experience a traumatic event are less likely to develop SSB than people who experienced a traumatic dental experience at the outset. Children with low CSS were found to have more dentist visits than children with high CSS.

Medical experience can also be attributed to the direct path: persistent health problems or negative medical incidents, which the patient (or parent) considers difficult or painful, can contribute to the fact that a negative attitude extends to dentistry.

The second pathway proposed by Rachman S. is based on the theory of social learning and suggests that anxiety may have developed as a result of the child observing the anxious behavior of another person and imitating this behavior

(modeling). As a rule, mothers are the most likely candidate. Maternal SSB is associated with SSB in young children. Parental SSB plays an important role in the development of SSB in children under 8 years of age and less for older children. It is difficult to establish mechanisms responsible for parent-child SSB relationships, however, managing parental anxiety at the dental clinic is important to minimize the likelihood that their fears and anxieties will be passed on to the child.

The last path proposed by Rachman S. relates to the acquisition of fears through social processes.

This pathway suggests that children will be afraid as a result of negative information they have seen or heard from parents, family members, peers, teachers, television or social networks getting to know people with SSB was a strong predictor of SSB in the child.

There is a correlation between the SSB of the child and the parents (family). Parents can talk very openly about difficulties/fears of dentists, like other members of the extended family. It is important to understand that the influence of close family members can help or interfere with treatment.

Endogenous factors that may increase a person's susceptibility to SSB include genetic vulnerability, personality features, age, and sex.

Some specific phobias have a strong genetic component. Ray J. et al. examined the correspondence of CSS between monozygous and dizygotic twins. The study involved 1,480 twins. The authors found that the risk of paired development of SSB was higher in monozygous than in dizygotic twins, and more often in girls. In addition, the study revealed a link between childhood and parental anxiety.

Authors found out that the high level of CoB among youth is connected with social, emotional and behavioural problems, the general alarm and temperamental line of negative emotionality.

Existence of fears and alarms is considered a part of normal development of the child and corresponds to the consecutive and predictable scheme of adulthood. As a rule, at small children most of all fears and alarms. A number of

researches showed that the CoB is higher in children than younger age. Etc. [18] reported Majstorovic M. about decrease in level of CoB in children aged from 4 up to 11 years, but then noted that after children were 11 years old, levels of CoB increased again. In Great Britain 12-year-old children had the greatest prevalence of CoB both in 2003, and in 2013. Thus, researches show that there is no accurate age at which it is possible to expect decrease in level of CoB.

Researches, as a rule, reveal the increased level of CoB in women and also, is reported about bigger specific fear and concern about drilling, local anesthesia and pain in comparison with men. One of possible explanations is what for girls and women it is easier to recognize from the social point of view that they are concerned, than for boys or men.

Therefore for stomatologists it is important to remember that boys, in particular, can not give information on the CoB without skillful and delicate inquiry from the expert.

The research Locker D. and coauthors was shown that about a half of people report that their dental alarm developed in the childhood. These people, as a rule, have heavier CoB at adult age, than people whose alarm developed at teenage or adult age. Researches also showed that children with CoB, most likely, will become symptomatic, but not active users of dental services at mature age. These long-term consequences of children's CoB emphasize importance of early intervention and treatment of children's dental alarm.

Poor communication of the dentist with the patient not only contributes to the development of SSB, but also plays an important role in maintaining dental anxiety. Therefore, it is important that all members of the dental staff are aware of how their behavior can affect children. For example, Zhou Y. et al. found that dentists were able to reduce SSB in children through an empathic style of communication and the use of brief physical contact (for example, patting on the arm), accompanied by verbal assurance.

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