Psychological Prevention and Management of Dental Anxiety

Tiril Willumsen, Maren L. Agdal, Mariann Saanum Hauge, and Bent Storå

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12.1 Introduction

Dentists can, paradoxically, be frightened when they are confronted by patients' anxiety. Research shows that many dentists feel uncomfortable and react with difficult emotions when treating anxious patients. It has also been shown that the more behavioral management methods a dentist masters, the more joy and satisfaction he or she finds in their work [1]. In other words, learning techniques for treating patients' dental anxiety in a general practice have the potential to not only help patients but also increase job satisfaction for the dentist.

In this chapter, the dentist is addressed as the one in charge of the treatment, but it is important to emphasize that cooperation between the dentist and the dental nurse is essential for a good treatment outcome. Patients' experience in a dental office is always a result of the efforts made by the full dental team, and, therefore, the knowledge described in this chapter, and in this book, is useful to all dental staff, including nurses and hygienists.

Psychological management of dental anxiety can be time-consuming. However, for providing the best possible oral health care from a lifetime perspective, it is just as essential as oral hygiene education or proper treatment of periodontitis. In addition, clinical experience shows that the time spent on dental anxiety treatment is time saved in the long run. Patients cope better with dental treatment, and canceled and postponed treatment sessions are reduced.

We will introduce Rita as an example of a patient with dental anxiety. She postpones dental treatment and finds it extremely unpleasant, but she still manages to go through with most treatments. Last year, she had a need for an endodontic procedure in a molar but chose to extract the tooth to avoid the frightening procedure.

Learning Goals

- To have knowledge of the basic elements in behavioral management of dental anxiety
- To be able to assess the level of dental anxiety
- To be able to carry out dental treatments based on a coping plan
- To have knowledge about behavioral management in combination with sedation and nitrous oxide
- To have knowledge about how to reduce patient anxiety through psychoeducation

12.2 Part 1: Basic Elements in the Prevention and Management of Dental Anxiety

This chapter relies on the knowledge of all the topics described in the previous chapters of this book. The patient has to feel respected and understood by the dental health personnel and rest assured that the treatment of dental anxiety is considered an important part of providing oral health care by the dentist. As shame is an important part of dental anxiety for many of the patients [2], a nonmoralizing attitude is important.

12.2.1 Providing the Patient with the Experience of Predictability and Control

A patient with dental anxiety will have an even greater need for predictability and control (including pain control) than patients without anxiety. In a Swedish study among patients with dental anxiety, having a "safe relationship with the dentist" and "a sense of control" were considered the most important factors by the patients in order to cope with dental treatments [3]. The experience of control is subjective and must be explored in each individual [4].

Dental treatment is at its best when the patient is confident and feels "in the driver's seat." Proper alliance, communication strategies, and structure of the consultation are essential factors for achieving this. In addition, the patient should constantly receive relevant information about the upcoming treatment. Knowing what is about to happen next has great potential for inducing feelings of safety, predictability, and control.

The patient should be met with respect and the anxiety validated during the first phone conversation prior to the patient's arrival at the clinic: "Thank you for telling me that you have dental anxiety. It is an important part of treatment in our office to deal with patients' anxiety. In the first session the dentist will have a conversation about how to give you the best possible care and if you wish, we will do an oral examination."

In a treatment process, it is useful to conclude each treatment session by discussing and planning the content of the next session, i.e., constructing a treatment plan. To further increase control and codetermination, an anxious patient may benefit from an opportunity to choose between two treatment options. "I suggest we start with the filling in the front tooth or in the upper molar, do you have any preferences?"

Box 12.1

Today's treatment:_

_____

_____

Next appointment: _____

Treatment plan next appointment:

_____

It is particularly important that the dentist makes an effort to help the patient to experience control at the start of the treatment. The professional can say "Tell me when you're ready." Predictive control will be increased by letting the patient give his consent to start the dental procedure. Such start-up control also allows the patient to prepare for the task, for example, "Focus on your breath, let me know when you're ready for me to start."

The patient and the dentist should agree upon stop signals before the treatment starts. Stop signals give patients the power to stop treatment, which gives them a sense of control. Several signals may work. For some, sounds from the throat can be a stop signal. One hand up – to signal "I need a break" or "I have to spit, breathe, itch, rinse, etc." – is commonly used. Two hands up may be used to signal "full stop." Patients who prefer stop signals may be asked "What stop signal can be OK for you to use?"

Many anxious patients are reluctant to stop the dentist during treatment. They may fear that the dentist will be annoyed or overlook their signal. Thus, it is important to test out and practice specific stop signals. Some patients have difficulty in daring to raise their hand. For these, a more passive method like holding one hand up and lowering it to signal stop could be an alternative.

Signals like these work well but are dependent upon the dentist's ability to see the patient's hands. It is a problem when the dentist is working, for example, in the upper jaw or with binocular loupe glasses and the field of vision is extremely small. Worse than not agreeing upon a stop signal is to have the opportunity to give a signal to stop but get overlooked by the dentist. Thus, cooperation with the dental nurse is essential. One person in the room must be responsible for observing signals, verbalizing them during treatment, and making sure that the stop signal is followed.

Some patients think that a dentist should be able to see when their patients need a break. This is not realistic and gives the dentist a responsibility he cannot fulfil. Studies show that treating patients with dental anxiety increases dentists' stress [5]. If the dentist is met with expectations from the patient he cannot fulfil, it may increase stress activation. The patient must be made aware that the dentist cannot be expected to know when he or she needs a break. By discussing and practicing suitable signals, both the patient and dentist will feel more secure and probably less stressed.

12.2.2 Checking Out the Alliance

There are several studies that indicate that an alliance between a professional and a patient is fundamental to achieving a successful treatment. Here, success means both the dental aspects and the treatment of the anxiety [6]. It is important to talk openly with the patient about mutual respect and emphasize the fact that teamwork is necessary if the treatment is to be successful. The patient needs to understand that the dentist takes their alliance seriously. Moreover, focusing on the alliance allows the dentist to explore it and to take corrective action if the patient–dentist relationship has got off to a bad start. Questions about the alliance should be asked throughout the treatment of patients with dental anxiety to help establish an alliance and create a safe relationship. One example is "It is important to make you feel safe and that we are working as a team, do you have any thoughts about whether I succeed in this?" (See ▶ Chap. 4 for more on the importance of the relationship during treatment.)

12.2.3 Psychoeducation

Explaining the symptoms and functions of anxiety as part of treatment is called psychoeducation. It is greatly advantageous to understand dental anxiety in order to cope with it [7]. A patient is taught that anxiety reactions are functional and natural if one is in real danger (see the previous chapter).

▶ Example

Rita and the dentist shake hands and say hello.

DENTIST: – Please take a seat.

RITA – sits down in the dental chair and the dentist observes.

DENTIST: – I can see that this is difficult for you, I also felt tremors in your hand as we shook hands, and your hand felt cold and sweaty. I would like to start out by discussing these kinds of reactions with you, is that OK?

RITA: – OK

DENTIST: – This is a natural reaction because your body perceive danger and is getting ready to escape from/handle/react to the situation. Your blood is passed to the large muscle groups in the legs and arms, there will be little blood supply to the hands and feet making them cold and sweaty. That is the only sensible reaction when you're going to escape from a dangerous animal but not just as understandable when you're stuck in a dental chair. ◀

12.2.3.1 Bodily Reactions

Often, it is a great relief for the patient to get explanations for their own bodily reactions in the context of anxiety (◘ Table 12.1).

▶ Example

A psychoeducative dialogue about tension and palpitations is as follows:

DENTIST: – What do you usually feel in your body when you're sitting in a dentist's chair?

RITA: – I feel very tense.

Table 12.1 Overview of some of the most important bodily reactions that dentists must know of in order to explain the biological function of a fear reaction to their patients

Symptom	Physiological explanation
Palpitations and increased heart rate	A lot of activity in the body because the body prepares for fight/flight
Sweat	The body gets rid of excess heat due to its high activation
Trembling	High activity in the muscles such as static training
Chest pressure/pain	Muscle tension
Dry mouth	Digestive activity is reduced, and there is an increased need for a free respiratory tract
Heat/cold sensation in the body	The blood flows to the large muscle groups in the legs and arms, and there will be little blood supply to the hands and feet, thus making them cold
Unreality sensation	Due to extreme activity in the sympathetic nervous system
Nausea or upset stomach	Digestive activity is reduced not to use too much energy
Tingling sensation in the body	Because the blood flows to the large muscle groups
Pressure on the bladder	To get rid of excess weight, the body will get rid of urine/intestinal contents in order to be able to escape faster
Feeling of breathlessness/difficulty in breathing	Hyperventilating to increase oxygen content in the blood
Dizziness and choking sensation	Due to hyperventilation, there is an imbalance between O_2 and too little CO_2 in the blood (hypocapnia)
Fainting	Vasovagal syncope – To prevent death from anxiety To gain control over respiration and blood pressure

DENTIST: – You mean in your muscles?

RITA: – Yes, I'm almost above the chair.

DENTIST: – And your heart?

RITA: – Yes, it's beating fast.

DENTIST: – This happens to protect you and is part of our survival mechanism. Because of what you have experienced in the past your body experiences the situation as dangerous. The body puts the muscles in alarm position and the heart pumps full speed to make you ready to escape from or fight the danger. And it happens automatically without you thinking about it. In this way, humans have survived dangers throughout history. So, your body reacts correctly based on what you've experienced before. What we want is to give you some new experiences and eventually this situation – to be at the dentist – will not initiate the fear response as it does now. ◄

Explaining what happens when muscle tonus is increased due to anxiety is quite simple, but explaining hyperventilation is not as easy.

► Example

A simple explanation of the complex mechanism is as follows:

The breathing mechanism has a "breathing thermostat" that tells us when we need more oxygen. We breathe oxygen in, and it is converted into carbon dioxide (CO_2). It is the CO_2 in the blood and exhalation that determines the thermostat (how much we need to breathe). This works well during physical activity. When we use a lot of oxygen, such as when we run, the breathing rate increases. When we are anxious or stressed, the breathing rate increases in the same manner as it does when we are running, even if the body remains immobile. As a result, we breathe more CO_2 than the body needs, we exhale more CO_2 than usual, and, thus, we get too much oxygen and too little CO_2 (hypocapnia) in the blood. Nevertheless, it feels like we are getting too little air and the need to take rapid breaths increases. In addition, we tighten the muscles of the chest as a kind of a protective muscle shell (like a turtle), which also includes the chest muscles and allows us to breathe only through the upper parts of the lungs. We can get dizzy and eventually become extremely unwell and feel like we are going to lose consciousness. If this proceeds, our body's autonomous nervous system will ensure a drop in blood pressure and we will faint in order to let the body resume normal breathing (one cannot die from anxiety). ◄

12.2.3.2 Catastrophic Interpretations and Thoughts

Catastrophic thoughts are terrifying automatic thoughts that appear without reflection and are often without a hold in reality. In psychoeducation, patients should learn that these thoughts are the result of the interpreta-

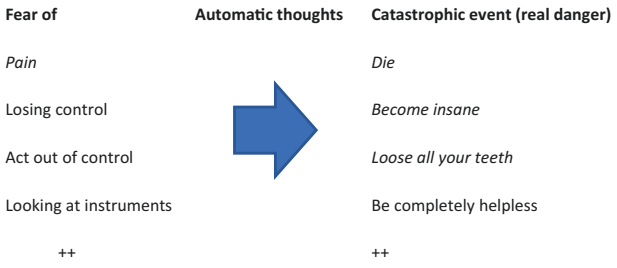


Fig. 12.1 Usual catastrophic thoughts in the dental office

tions that one makes of a situation (see the previous chapter for details). Catastrophic interpretations are often subconscious; you just feel that you are afraid without being aware of what you are afraid of. Our tendency for catastrophic thinking has a biological explanation; for survival, it is useful to interpret a situation as more dangerous than it actually is. Your chances of surviving are increased with "better safe, than sorry" or "better to run too fast, too often, than too slowly, once" (Fig. 12.1).

To uncover catastrophic thoughts, one can start by simply asking, "What are you afraid of?"

The more severe dental anxiety the patient has, the more important it can be to follow the catastrophic thoughts until real danger occurs. Let us look at some examples of catastrophic thoughts and how to explore them.

► Example

RITA: – I'm afraid I'm going to feel pain.

DENTIST: – If so, what's the worst thing that can happen?

RITA: – I may lose consciousness due to the pain.

DENTIST: – If so, what's the worst thing that can happen?

RITA: – That I don't wake up again (real danger).

DENTIST: – How likely do you think it is that this will happen?

RITA: – Approximately 30%.

DENTIST: – Yes, then it's no wonder you're afraid to feel pain. We know that what you describe is something that in reality never happens, but if you think like you do, it's natural that you get scared. Is there another possible solution or outcome if you feel pain?

RITA: – Yes, I can as you have said give signal for you to stop.

DENTIST: – Yes…. (active listening, give her time to think)

RITA: – and then you can give me more anesthetic. ◄

The goal of exploring catastrophic thoughts is to redefine the automatic negative line of thought into a constructive line of thought. When the patient learns to think "I can tell the dentist to stop if I feel pain," then catastrophic thoughts are averted. Edna Foa writes in the manual of Prolonged Exposure that exposure is the most effective treatment for catastrophic thoughts because it allows the patient to understand through experience that these catastrophic thoughts are not correct [8]. Dental treatment will almost without exception include exposure to frightening stimuli for the fearful patient, and, therefore, if addressed adequately, it has the potential to correct catastrophic thoughts.

► Example

Catastrophic thoughts:

Nina fears that the dental team will not stop even if she feels terrible, either by continuing "a little more" or holding her down. Then, she will feel completely helpless.

Birgit is afraid that she will sit in the dental chair, with her mouth opened higher than her rheumatism allows. She is afraid that she will have to open her mouth too wide to make room for dental instruments. She is afraid that the dentist will not listen when she needs to take a break and that she will remain in helplessness and get extreme pain in her joints afterward.

Colin feels completely unprepared for what is going to happen. He thinks that he is going to be paralyzed and not be able to escape.

Tracy is afraid that water or saliva will enter the back of her pharynx and suffocate her. ◄

12.2.3.3 The Anxiety Hierarchy

The purpose of establishing a patient's individual anxiety hierarchy is both to raise the patient's awareness of his/her own anxiety: "Am I more afraid of the syringe than the drill?" and to provide necessary information on systematic exposure when applicable (see the next chapter). Often, patients with dental anxiety have an unspecific description of situations and procedures that trigger their anxiety. They dread the whole dental situation. During construction of an anxiety hierarchy, patients will be able to relate to their anxiety reactions at a more specific and detailed level, including specific dental procedures, and, consequently, will be able to better think and react to each specific procedure independently. The anxiety hierarchies are highly individualized and will show the patient "how my personal dental anxiety is constructed" or "this is my dental anxiety." Patients should be encouraged to take a picture of their anxiety hierarchy and get to know it.

This hierarchy will also provide useful information to the dentist on how to best plan further treatment for this particular patient. Even when systematic exposure is not intended, it will often be useful to start with treatments at the lower end of the ladder/hierarchy. This will allow the patient to gain more confidence and the alli-

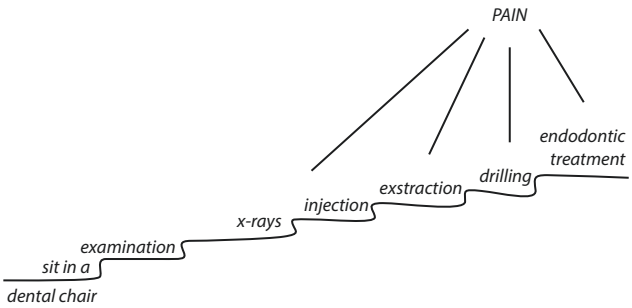


Fig. 12.2 Example of an anxiety hierarchy (Rita's). As pain is the common denominator for Rita's pain, focus on receiving injections would probably be a good start for the dental treatment

ance between the patient and the dentist to strengthen before starting the more challenging tasks at the top of the hierarchy. The patient's anxiety hierarchy is designed by putting the patient's anxiety of procedures in the dental treatment into a gradient. The dentist starts by drawing (on a paper or a board) the empty "staircase" and in continuation fills in the steps with anxiety-provoking situations of increasing severity. A good start may be to explore the "worst" procedure first, put it at the top, continue with what the best procedure is at the bottom, and eventually put it in place in the middle. The fears should be written with a pencil so that they can be changed as the patient reflects on his or her anxiety (Fig. 12.2).

12.2.3.4 The Habituation Model of Anxiety

The habituation model of anxiety (see Figs. 12.3 and 12.4) is a model used to explain the step-by-step exposure to patients. It illustrates how situations that the patient perceives as frightening gradually become less frightening if one repeats them. It should be used in systematic CBT for anxiety treatment (see the next chapter) but can also be useful for psychoeducation in patients who are to receive, for example, sedation to overcome their dental anxiety. The habituation model of anxiety should be drawn while explaining to the patient the important parts of the anxiety process:

Escape: What happens to anxiety in avoidance/escape reactions is drawn into the curve; the anxiety rises first, but the anxiety level falls abruptly if one cancels or does not show up at an appointment (gray line).

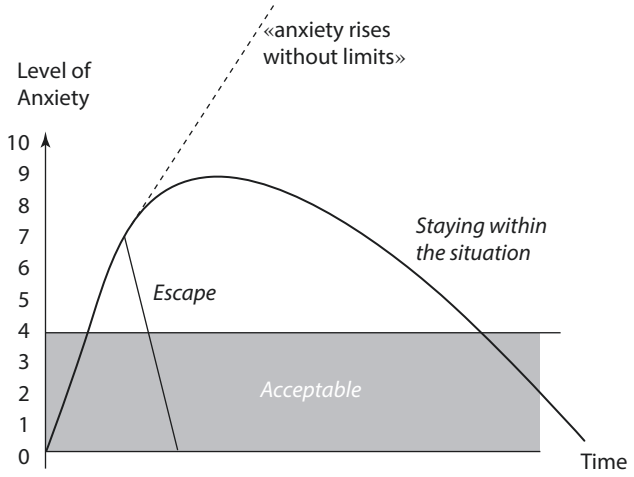


Fig. 12.3 Habituation model of anxiety. Time is represented horizontally and level of anxiety vertically. It can be seen how anxiety rises when individuals are exposed to a scary situation. The gray straight line shows a change in anxiety in an avoidance reaction, and the gray dotted line shows the activation of catastrophic thoughts established when choosing to avoid. The last line shows how anxiety develops if one stays in the situation under safe, controlled conditions

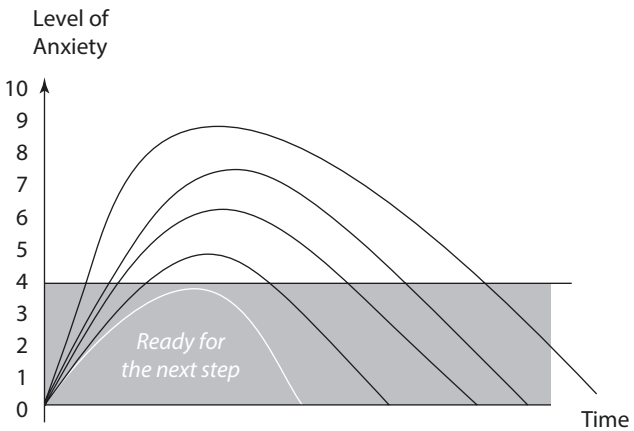


Fig. 12.4 Change in the curve model with repeated exposures. The line at 4 on the level of anxiety illustrates an imaginary patient's maximum limit of anxiety for feeling okay during dentistry

► Example

DENTIST: – You have told me about how you delay booking of dental appointments even if you know you need to go. I would like to explain how avoidance behavior in general affect anxiety, is that OK?

RITA: – OK

DENTIST: – When you get into a frightening situation, the anxiety rises abruptly, the discomfort of this often leads to the decision to avoid the danger. As you cancel, the anxiety will fall abruptly. Instantly this feels good. You have avoided the terrifying situation and the brain interpret the escape/anxiety reduction as having succeeded in getting away from the danger -implied that the danger exists. The next time you are heading into a similar situation, your brain would like to seek the same solution, as this strategy was interpreted as successful last time. In other words, avoidance has led to increased anxiety and avoidance behavior. Is this something you can think relevant to you?

RITA: – Yes ◄

Avoidance is often a result of a feeling that anxiety can rise unlimited and that it will only continue to escalate if you do nothing to avoid the danger. So, to avoid/flight, making you think the avoidance helped you escape the danger. In this manner, catastrophic thoughts create avoidance, but avoidance also creates/sustains catastrophic thoughts.

Given the condition that you are in control, you can stay in the situation with some anxiety activation (but no more than that you can control), and the anxiety level will eventually decrease if the danger is not real. When repeated, the anxiety reaction will over time be reduced.

Metaphors are useful in the process of explaining this principle to patients. Let us go back to Rita:

► Example

DENTIST: – During treatment with us, we will try to get a feeling of control all of the time, and we're going to proceed slowly, how slowly will depend upon how you react. If your anxiety is controllable, we will be able to do regular dental treatment at once, if it is more difficult, we must consider other treatment options (see the next chapter). Anyway, we will together work out strategies to keep you in your window of tolerance (see chapter...)

To explain the principle of habituation to the dental situation, I will use a completely different example. For example, if you were afraid of heights and did not dare stand in a high ladder to paint the house. In this case we could put standing on top of the ladder as maximum fear of you (mark 10 in the drawing of the anxiety curve).

I will hold the ladder so it's safe. We would start with you trying to stand on a step that you think is a little scary for a short time, for instance 3 s and then step down. Your anxiety would be for example, 7 on the anxiety scale.

Do you understand this example?

RITA: – Yes

DENTIST: – When you have rested and become calm again, we would do the same thing again, and probably you will not be as scared as the first time. The more you practice, the less anxiety you will feel. This is habituation. When you feel safe, we can go on with the next step. In my experience this principle may be transferred to the dental situation, what do you think?

RITA: – I think so, if you go slowly, let me take breaks and I think it is worth a try. But you must make it as painless as possible.

DENTIST: – I agree, it is very important that you have minimum pain. Painful experiences may be very bad for your dental anxiety, even if you think it will work OK and you "just want to get it over with." Both of us need to be patient and work it out slowly and in full control, OK? ◄

12.3 Part 2: Coping Strategies

How patients cope with dental situations is crucial to how dental anxiety may be increased or reduced. Dental personnel who actively use strategies to improve their patients' coping will contribute to reduction of dental anxiety. In a Swedish study, Bernson et al. found that dental anxiety patients with regular recall treatment had more positive coping strategies than did dental anxiety patients who avoided dental treatment [9].

12.3.1 Giving Positive Reinforcements

When dealing with children, it is important to give praise [10]. The same goes for adults with dental anxiety, but one should be aware not to sound childish. Exclamations like "You were so clever today!" work poorly on an adult. It is better to focus on the positive effect of the interaction between the patient and dentist and make statements during the clinical treatment phase like: "When you are as relaxed as you were now, it is much easier for me to make the injection with the least amount of discomfort," preferably in combination with useful feedback like "This worked well from my view, you kept your tongue still and we got a saliva free situation when making the filling, how did you experience it?"

12.3.2 Distraction

Music played through headphones can work well as a distraction for adult patients with mild and moderate anxiety. Scientifically, the effect is questionable [11, 12]. In patients with high anxiety, no effect has been found [13]. Studies with film, both two-dimensional (2D) and three-dimensional (3D), have also been conducted but without any significant effect. Testing music in headphones or movies/computer games from patients' phones may be a good idea for patients who are motivated by these interventions. However, some patients may exhibit an opposite effect; they may feel less in control and left to themselves when they cannot hear the dentist. The dentist may ask the patient: "Did you find it calming when we tested music with your headphones?"

Another use of music is music in the treatment room for all to hear. In other contexts, soothing music has been found to affect breathing and heart rate in everyone present in the room [14].

Another distraction technique is to "move" the focus of pain by stimulating/pressing a point on the body different from the area of dental treatment. This may distract and remove attention from what is happening in the mouth. Melzack and Wall [15] found the nervous system to have a limited capacity for pain impulses. Stimulation takes up capacity in the autonomic nervous system, and

pain sensation is reduced (in addition, the massage initiates increased blood flow to speed up the immune system). This may partly explain why we automatically massage ourselves in places that are painful. There are two ways of applying this, regularly used by dentists: (i) the patient uses the right fifth finger (thumb) to put pressure on the skin between the left fourth and fifth finger and (ii) the dentist cautiously squeezes the cheek with fingers holding the cheek aside while applying anesthesia.

12.3.3 Assessing Catastrophic Thoughts

Assessing and reconstructing catastrophic thoughts can be done in all phases of the treatment. At the start of the treatment, it is used to explore anxiety as described previously (see ► Sect. 12.2.3). Another example may be to discuss reactions in the debriefing after the treatment. We go back to Rita:

► Example

DENTIST: – OK- now we have made the filling we planned, from my point of view this worked well. How about you?

RITA: – It was far better than I expected it to be.

DENTIST: – Yes, in advance you had some negative thoughts?

RITA: – Yes, I thought that it would be very painful, but I experienced that you waited for the local anesthetics to work, and you also gave me an extra injection, so it was not.

DENTIST: – That is good to hear, if you were to do the same procedure again tomorrow, what would you think?

RITA: – I think I would fear pain, but I would think that it worked well today, and I have the opportunity to ask for more of the local anesthetics and wait until it works.

DENTIST: – This is great, if you are able to think "if I get pain, I will ask for more local anesthetics" you have reconstructed your catastrophic thought of pain. It is important that you try to remember this and remind yourself of it before next treatment. ◄

12.3.4 Using the Window of Tolerance

While dealing with all levels of dental anxiety, it is important to work within the patients' window of tolerance (see ► Chap. 2).

12.3.4.1 Decreasing Activation When the Patient Is at the Higher End of the Window of Tolerance

The main rule is to stop and introduce coping strategies when the anxiety activation increases beyond control. The objective of these coping strategies is to bring the activation down to a level that is possible for the patient to handle and, hence, get a sense of achievement. In principle, anything that seems calming might work.

Muscular relaxation can help regain control of anxiety [16]. Several studies have shown systematic relaxation training in combination with exposure as an effective treatment for dental anxiety [17, 18].

Applied relaxation is a method developed to control bodily activation. The method is based on two basic principles: (1) the patient learns to recognize early signs of muscular tension and (2) the patient learns relaxation [19]. This method has been found to be effective in dental anxiety treatment [20]. Bodily activation during dental treatment is individualized, and it is important to figure out the bodily reactions when anxiety rises (for instance, tingling sensations in the hands, stomach ache, and tension in the shoulder muscles). Patients should learn the unique patterns of responses that arise under the influence of anxiety to help recognize personal needs during treatment (for instance, if a break is needed). Knowledge of a patient's unique reactions when a rise in the anxiety level occurs is also important information to the oral health-care personnel, since it gives valuable information about which part of the patient's body should be more closely observed during treatment to help uncover changes in anxiety levels (see ► Sect. 12.4.2.3). In applied relaxation, the patient, dentist, or nurse recognizes the symptoms of a rise in anxiety and initiates a break for relaxation to bring down the activation level.

Control of breathing is relevant in relaxation training since dental anxiety patients often automatically stop breathing or start hyperventilating [21]. The patient must be asked to observe his/her breathing: "Do you notice your breathing?"

It is useful to check whether the patient has experience with relaxation training or breathing exercises, and, if so, encourage them to use the same during dental treatment.

Tip

Three simple breathing instructions are presented here. The instructions should be given in a calm voice. Clinical experience has shown it to be beneficial if the dentist or dental hygienist gives out instructions before starting the dental procedures. During treatment, the dental nurse follows up and gives the instructions. The pace should be slow and steady.

1. Exhale one– two–three
2. Breathe and hold one–two–three and release
3. Breathe in wait ... exhale wait ...

Body scanning is somewhat more extensive but is effective as a muscle relaxation method and still quite time-efficient.

► Example

An example of instructions during body scanning is as follows:

Ask the patient to sit comfortably in the dental chair and give instructions in a calm and muted voice: "Focus on your toes. Feel that your toes are relaxing and that they are securely attached to the bottom of your instep. Feel your heel relaxes. Focus on your legs, feel that blood flows from the legs and that the legs relax and lie side by side in the chair. Feel your knees, the knees are completely relaxed. Focus on your thighs, feel that they lie heavy in the chair. Focus on your thighs, feel that they lie heavy and comfortably in the chair, feel that your buttocks have good support in the chair and relax. Make contact with the lower back, the middle part of the back, which ends up in the top part of the back. Your body have support in the chair and you relax. Focus on your shoulders, feel that your shoulders are as far down as possible and slightly back. Back of your head, feel that the back of your head is relaxing. Think of your forehead, focus on your forehead, forehead relaxes. Feel your cheeks, see that you can relax your cheeks. Relax in your lower jaw, let it fall and create a freeway space between the teeth in your upper and lower jaw. Let the tongue relax, you can feel that when it is relaxed it will be big and fill out the space between the teeth." ◄

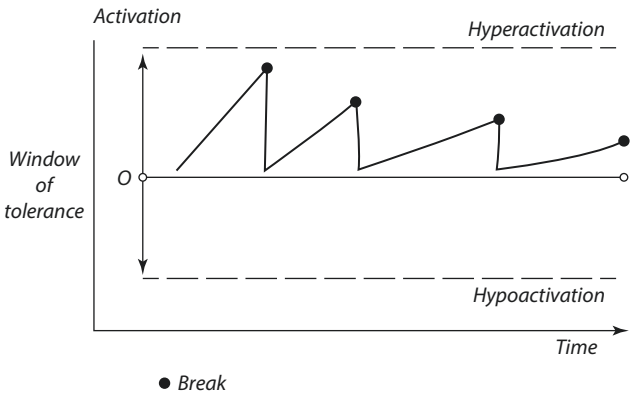
We will continue with Rita and illustrate how the treatment progression may be explained by using the anxiety curve, relaxation training, and the window of tolerance. In Rita's case, her activation obviously increases, but, if in doubt, the dentist may ask "Do you feel that your activation increases or decreases when you approach a dental procedure?"

► Example

DENTIST: – I will try to explain to you how we can proceed with this. I will do that by using the window of tolerance model. We all have a level of activation where we at "at our best". It is in this activation level our brains function best, and we are best prepared for technically challenging tasks. At this activation level we are in the center of our window of tolerance. Both above and below this we have a zone where we function adequately, but the nearer we get to the limits of our window of tolerance the poorer we function. For example, it gets more difficult to give stop signals or to understand what I am saying as the unconscious part of your body and brain is in a survival situation and then getting away from danger is the most important. If you are above or below the limits of the tolerance window the activation is very unpleasant and if you don't have proper coping strategies you will feel that the anxiety is in charge, not you.

Together we will make sure that you don't get that experience. By giving you good information in advance and practicing relaxation in combination with start- and stop signals we will control your anxiety like this (draw). Your anxiety will rise. It is important for you to concentrate on observing where and how you feel the anxiety in the body, and ask me to stop when it rises, as we discussed in the coping plan (see page…). We will take breaks to work with relaxation, and when you feel comfortable and ready, we start up again. As you get used to the situation your activation will decrease and usually the need for breaks will be reduced. In this way slowly and calmly, we will get your dental treatment done. How does this sound to you, do you feel like trying?

RITA: – I think this sounds a bit scary, but at the same time I think it is worth a try (◘ Fig. 12.5). ◄



◘ **Fig. 12.5** A typical activation scheme when using systematic relaxation training. Time is represented horizontally and level of anxiety vertically. Zero represents an activation level optimal for feeling calm, secure, and able to cope with the situation. You start out with systematic relaxation procedures, e.g., breathing techniques or other methods of relaxation training given by the dentist or the dental nurse. When the patient feels ready, treatment starts. When the patient's activation increases, then he/she gives a signal and the dentist stops working. Instructions for systematic relaxation procedures are given. When the patient feels calm and ready, the treatment continues. It is important to teach the patient to be familiar with his/her bodily activation and to be sure that the patient feels safe and able to stop the treatment. It is also important to stop before the activation gets too high. Ideally, the patient shall stop early, as soon as he/she feels the activation starting to increase. With repeated cycles of treatment/relaxation breaks, the bodily activation and the feeling of fear eventually decreases. This method has been tested in applied relaxation training [19, 20].

12.3.4.2 Increasing Activation When the Patient Is at the Lower End of the Window of Tolerance

A main rule is to stop when anxiety activation decreases beyond control and introduce coping strategies.

The objective of the coping strategies is to increase activation, "wake up" the patient, and make the patient be more at present.

The most common problem with decreased activation in dental care is parasympathetic activation.

Parasympathetic activation may result in a sudden decrease in blood pressure and result in fainting or almost fainting [22]. Ordinary symptoms are dizziness, cold sweating, and a fear of "disappearing." It is when receiving injections that these reactions are most often seen.

Applied tension is like applied relaxation developed by Öst and Sterner [23]. In contrast to applied relaxation, applied tension aims to counteract the fall in blood pressure by increasing the blood pressure by tightening the big muscle groups in the legs, thighs, buttocks, stomach, chest, and back. It is based on two basic components: (1) the patient learns to tighten the large muscles and (2) the patient learns to recognize the early signs of a fall in blood pressure (for instance, feeling dizzy, cold, sweaty) [23].

The dentist shows the patient how to tense the large muscle groups in the body by increasing the tension in the legs, buttocks, hands, and arms over 15 s.

Tip

Applied tension:

DENTIST: Draw both hands into your fists. Pull your fists into your chest and hold for 15 s, squeezing as tight as you can, I will count to 15, then you shall relax for 30 s. We will follow this procedure 5 times.

It may be useful to hold a mirror in front of the patient to observe how the increased blood pressure will make the face redder.

During the injection, the patient pulls his/her fists toward his/her chest squeezing as tightly as possible. To further increase blood pressure, the patient may lift up his/her legs and move the feet in the air and, in this manner, activate muscles in the legs and the stomach. This method is effective in physically increasing activation and might have additional benefits as a distraction.

More seldom, but all the same maybe more easily overlooked, is decreased activation. It primary affects traumatized patients. Decreased activation occurs when the patient approaches a fawn condition. From a trauma perspective, this may be called submission or dissociation (see ► Chap. 2). This is a complex reaction and will be described in more detail in other chapters.

Grounding techniques are strategies that can be used to help patients focus on what they observe in their present environment to wake up and be present and detached from the past. All senses may, in principle, be used. It is important to know that these strategies are individualized and what works for one patient may not work for another. Thus, these strategies should be discussed in advance. Often, patients have used strategies in other situations that can be used in the dental office as well. Some easily accessible strategies are mentioned here:

Tip

"Keep your feet on the floor, can you feel that you have contact with the floor"

"Feel how you sit in the chair, how you are in contact with the material of the chair"

"Rub your hands against your thighs. Feel the pressure on your skin."

"Can you tell me the time and date of today."

"Focus upon the body – curl and stretch your toes". Body scanning maybe useful here.

"Look around the room, spot three blue things, focus on the details."

"Touch this object, focus upon whether it is smooth or rough, hard or soft." A stress ball (see picture) may be helpful in this context.

"Can you identify some pleasant smell that arouses good associations or something unpleasant that you don't like?"

"Can you describe sounds that you can hear?"

12.3.4.3 Observing Patients' Presence in the Present

If patients are at a risk of staying above or below their window of tolerance, it is important to remember that their presence in the present is the antithesis of flashbacks and reliving bad experiences.

If the patient is hyperventilating or due to other reasons "disappearing" above – or below – the window of tolerance, it is recommended to establish eye contact and control breathing: "Look at me and breath in the same manner as me, in through the nose and out through the mouth."

Another effective task is to "talk the patient to the present"; this is especially important in flashbacks:

» It's 26 June 2020 (date today). You're in the dentist's office, you're here in Oslo (name the location). You are safe, and we are taking care of your teeth.

12.4 Part 3: Daily Practice

This section will focus on how to organize dental treatment when patients have dental anxiety.

12.4.1 Emergency Treatment

Many patients with dental anxiety seek dental treatment only in case of urgent needs. Patients in an emergency should always receive help with their pain. Sedative premedication and adequate local anesthesia as well as

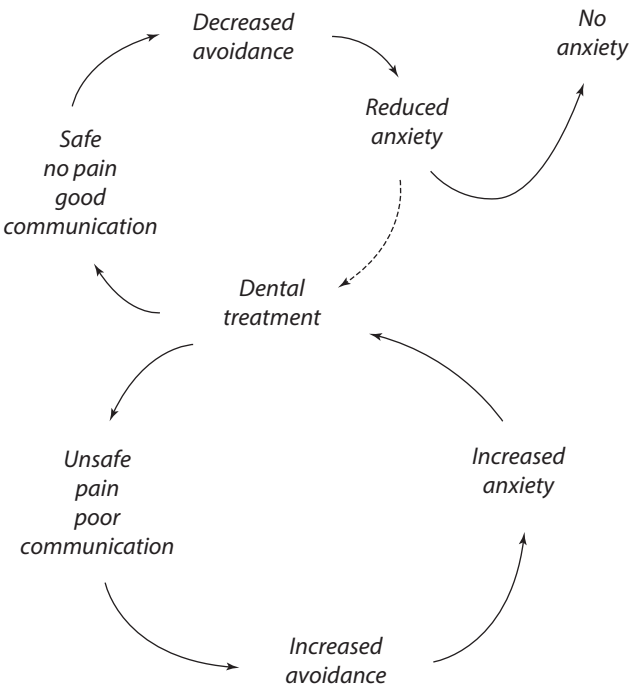


Fig. 12.6 The window of opportunity. Every dental treatment session has an oppertunity to modify dental anxiety, the figure is a modified version of Nermo et al. [24]

pre- and postoperative pain control are essential here. An emergency situation is an opportunity to motivate the patient to address the dental anxiety problem. Even in emergency situations, an appropriate treatment plan including both operative dentistry and psychological management of dental anxiety should be worked out. Treatment should never be decided without taking the patient's anxiety into consideration; the main goal should always be that the patient returns for further treatment. Often, dental anxiety patients have negative experiences in emergency situations with stressed dental professionals and little time for adequate pain control (see interpersonal circle; ▶ Chap. 12). On the other hand, if the emergency generates positive experiences, there is a potential for reducing dental anxiety. In a study among adolescences from Norway, Nermo et al. found that large treatment needs in combination with low pain experiences decreased dental anxiety [24]. One positive dental experience may turn a vicious negative cycle of dental anxiety into a positive circle, which leads to overcoming the anxiety (Fig. 12.6).

12.4.2 Elective Treatment

A friendly welcome and a minimum amount of waiting time is a good start. Talking to the patient in a neutral area makes the patient more relaxed and may be a better atmosphere for preclinical discussion.

12.4.2.1 The Preclinical Phase

An appropriate treatment plan including both operative dentistry and psychological management of dental anxiety based on shared decision-making should be outlined. The dentist is responsible for fulfilling all components of an informed consent in a manner that the patient experiences ownership of the plan (see ▶ Chap. 6).

Patients may want more comprehensive treatments once they understand that they are able to cope with the dental treatment situation than they were able to prior to the treatment. To increase patients' motivation, it is important to initiate a treatment plan according to their preferences. Patients' preferences are probably a good starting point for the treatment, and the dentist should take into consideration the patients' requests, for instance, to improve aesthetics or eliminate pain.

Patients with dental anxiety often look at dental treatment as "black" or "white" or "success" or "failure." Thus, it is important to make clear that there are several ways to solve dental challenges. For example, one might say: "We have several options concerning how to get your dental treatment done. I suggest we start by doing this slowly with focus upon proper information and that you are in full control all the way. If you still feel uncomfortable, we have other options; for example the use of a sedative tablet, we may choose to spend more time on a more systematized treatment aimed at treating your anxiety or I can refer you to a specialist dental fear clinic."

12.4.2.2 Assessment of Dental Anxiety

Assessment of dental anxiety should be part of the general anamnesis. A question like "What's it like for you to get dental treatment?" is a good starting point.

▶ Example

RITA: – I don't like dental treatment; in fact I have dental anxiety

DENTIST: – Thank you for telling me, it is important to know, and I would like to know your thoughts about what made you develop dental anxiety.

RITA: – My dentist as a child held me down during treatment, it was awful.

DENTIST: – I see, we know that such behavior from dental staff is very powerful for establishing anxiety. Do you remember anything else from the treatment?

RITA: – Yes, it was extremely painful.

DENTIST: – That is a vicious combination, feeling helpless due to being held down in combination with pain, how was your social support?

RITA: – What do you mean?

DENTIST: – How did the dentist and the nurse react and were you alone?

RITA: – They became angry at me. My mother was there, and she was angry too.

DENTIST: – This was a very bad start, how was your dental anxiety after this?

RITA: – I have never liked dentists after that, as an adolescent I had a dentist that was OK, but as an adult I have only been to emergency treatments when in pain and it has always been painful. ◄

In addition to asking, it is beneficial to use a validated questionnaire, which may well be completed in advance. The dentist is obliged to go through the results together with the patient; otherwise, the patient will feel neglected.

The Modified Dental Anxiety Scale (MDAS) is extremely easy to use and has been shown to correspond well with patients' anxiety levels [25]. The MDAS is available in many languages, see: https://www.st-andrews.ac.uk/dentalanxiety/.

Another useful questionnaire may be the Index of Dental Anxiety and Fear-4c (IDAF-4c) [26]. This is a more comprehensive questionnaire that provides more specific information.

12.4.2.3 Devising a Coping Plan with the Patient

Coping techniques are beneficial for anxious patients [9]. A coping plan is a tool that can be used to ensure that the dental professionals and the patient agree on the framework of treatment. The aim is to make an individual "recipe" to ensure the best possible dental treatment situation (Fig. 12.7).

Fig. 12.7 Coping plan exemplified by Rita

Coping plan for *Rita*

The aim of the coping plan is to facilitate a best possible treatment situation during dental treatment.

WHAT the dentist/dental hygienist/dental nurse needs to know about me (background, cause of fear, special needs, triggers):

- *I was held down during painful dental treatment as a child and have had dental anxiety as long as I can remember. Even getting an injection is painful.*

My catastrophe thoughts/ what I'm most afraid of:

- *Pain. When in pain, the dentist won`t stop, telling me I should manage this. This will leave me feeling helpless/ridiculous.*

What increases my anxiety?

- *Expectations and feelings of pain and to feel out of control during treatment.*

What do I do if I feel the anxiety rises (my coping strategies)?

- *Focus om breathing, give a stop signal and ask the dentist to take a break, if pain give me more local anesthesia*

My bodily reactions when anxiety rises (to be observed by the dentist/dental hygienist/dental nurse):

- *Muscular tension maybe best to observe by watching my arms and hands. In addition: sweating, short breathing. I tend to become quiet and obedient to what the dentist tells me*

Relevant adaptions (breaks, quality of dialogue, explanation, counting during treatment, etc.):

- *Explain everything to me, use enough local anesthetics, listen when I have worries, give me opportunity to take a break.*

Stop signals:

- *I raise my left hand when my anxiety rises,or I want a beak*

Routine in case of cancellations/no show:

- *Send me an SMS the day before, and if I don't show up give me a call*

Utilizing a coping plan can create a win-win situation: the patient becomes more confident that the dentist understands his/her needs and the dentist will have relevant information and feel more secure when trying to respond to the specific needs of this unique patient. It is important to stress that this is a flexible plan that can be used during treatment.

The process will probably be best and most efficient if the dentist asks open-ended questions and discusses coping techniques based on the patient's former experiences with coping strategies during dentistry or in other contexts. Working together with the coping plan provides the basis for a more efficient treatment and, consequently, may act as a time-effective task.

12.4.2.4 The Clinical Examination Phase

The clinical examination phase has a great potential for testing both reactions to having the dentist's instruments and fingers in the oral cavity and for practicing start/stop signals.

Many patients feel anxious about the probe since they have experiences of unpredictable pain when dentists have examined their teeth with a probe. As a ground rule, the probe should be used only when necessary and when the patient is prepared for it. Focus should be on giving an adequate explanation of why and when a probe is needed. Many patients benefit from the knowledge that scratching is an unpleasant sound but means that the tooth is healthy.

It is also important to provide patients with a realistic picture of their own dental status to increase their feeling of being in control.

► Example

"I will start in the right side of the upper jaw and I will all the way tell you what I find. I start with the back tooth, it has a big hole, but it can be repaired, the next is the sixth year molar, is very broken so it's probably lost, but the two next ones it seem healthy, the canine is also absolutely fine and it's very good as the canine is a very important tooth in the dental arch" etc. ◄

To increase control further, a hand mirror may be useful. As the mouth is so highly innervated, small changes (a swelling or a lost part of a filling) are enlarged and feel huge. The mirror may help check in with reality, challenging the fantasy and catastrophic thoughts. Ideally, all dental anxiety patients should test using a hand mirror during the dental examination, and many patients have found this to be beneficial, even if they did not think so initially. Many patients are reluctant to use a mirror, and the dentist should undermine the importance of using a mirror during examination and treatment. It is important that the patient her/himself holds the mirror so that she/he can decide how much she/he wants to see. Mirrors fixed on the unit may be counterproductive. The patient may feel compelled to look.

12.4.2.5 The Clinical Phase of Dental Treatment

Tell–show–do is an effective method when introducing children to dentistry [27]. The concept of explain–ask–show–do is based on tell–show–do and applied in relaxation and is well-suited for anxious adult patients. The dentist explains the procedure and what the patient is expected to experience and answers any questions that the patient may have. Then, the dentist asks for permission to move on to "show" and "do." If the patient's dental anxiety is moderate, then this may be the first method to check out. If the anxiety is more severe or the patient does not benefit adequately, then more elaborate psychoeducation and coping strategies described earlier in this chapter should be introduced.

Many patients with anxiety have reported dentists as being supportive at the beginning of treatment, but, eventually, the dentist "forgets my anxiety and just keeps going." To counteract this development, it may be useful to plan the dental treatment as a work with many subtasks. Between each subtask, the patient should be "reset" physically and mentally and get ready to take on the next part of the treatment.

The more anxious the patient is, the more subtasks are needed (◘ Fig. 12.8).

Tip

Explain–ask–show–do should be used in this combination:

- Explain–ask–show–do
- + Proper communication (see ► Chap. 6)
- + Systematic relaxation training (see ◘ Fig. 12.5)

12.4.3 Psychological Management in Combination with Pharmacological Sedation

The use of benzodiazepines or nitrous oxide gas has been shown to be useful tools for patients with dental anxiety [16, 28–30]. General anesthesia may also be a treatment option in patients with severe dental anxiety problems.

However, sedation and general anesthesia should always be a supplement to psychological management. In patients with dental anxiety without complex comorbidities (cognitive impairment, chronic psychiatric diseases, etc.), a successful treatment outcome is to cope without sedation. Sedation may still help us reach this goal, since treatment sessions while sedated, when combined with adequate psychological management,

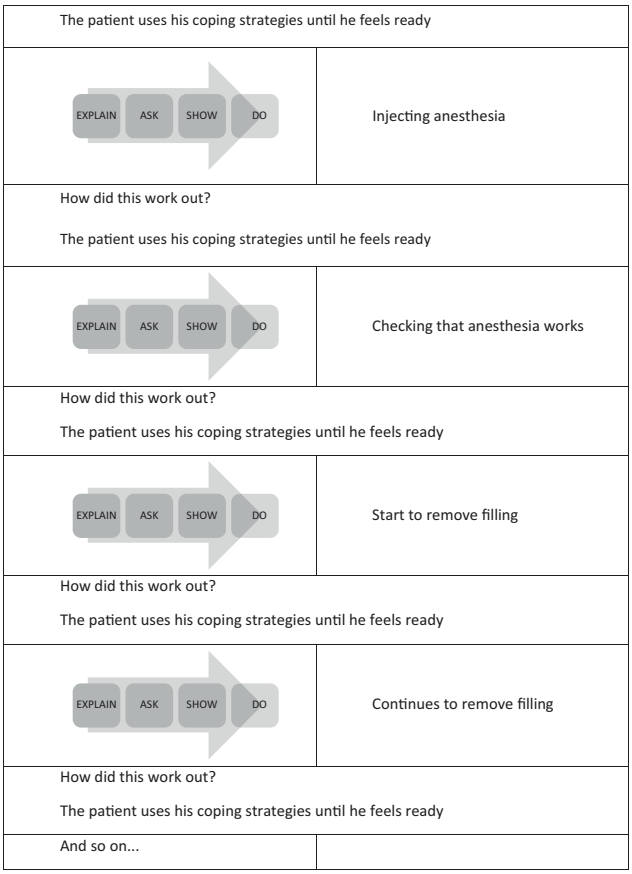


Fig. 12.8 How to deliberately divide the treatment into subtasks and use "explain–ask–show–do"

can provide good experiences. Moreover, clinical evidence shows that these good experiences may increase confidence and patients may after some sessions be able to expose themselves to treatment also without being sedated. The downside is that being sedated may also inhibit learning, implying that exposure while sedated is less efficient than it would have been without sedation.

Some indications are as follows:

Need for dental treatment in combination with high dental anxiety and/or low motivation.

Comprehensive dental treatment (for example, surgical interventions or large-scale prosthetic preparations).

Strong gagging reflexes.

A relatively short half-life is desirable for dental treatment. Some of the medications recommended, such as midazolam, have an extremely short half-life and the effect may decrease toward the end of the treatment. However, the drug may be highly beneficial as the anxiety most often is the highest at the start of a treatment; this is particularly true for patients with a fear of injections.

Benzodiazepines can also be used as a premedication to improve sleep the night before treatment. A patient who arrives at the clinic exhausted from lack of sleep due to worries and fears has less resources for working with anxiety reactions and coping strategies.

It should be noted that patients may experience hallucinations during sedation. Therefore, to ensure the patient's safety and prevent false complaints, the dentist should always be assisted by at least one dental nurse.

Tip

Pharmacological sedation should always be used combination with psychological management:

- Pharmacological sedation
- + Explain–ask–show–do
- + Proper communication (see ▶ Chap. 6)
- + Systematic relaxation training (see ◘ Fig. 12.5)

12.4.4 Cooperation with the Patient's Doctor/Psychologist

Rita has relatively understandable dental anxiety. In cases where the patient has a more complex background and/or dysfunctional personality traits, it is beneficial to cooperate with the patient's physician, psychologist, or therapist. The dentist may consult with the physician, psychologist, or therapist (provided the patient gives consent) or a common consultation may be arranged. Clinical experiences show beneficial outcomes by making the dentist and physician, psychologist, or therapist gain better understanding of each other's treatment arrangements. If the patient is in the middle of a psychological treatment, it may be wise to adapt to anxiety/dental treatment in the process of the psychological treatment. When the patient's dental anxiety is part of general mental problems, it may be beneficial to plan appointments with the therapist before or after the dental appointment.

Box 12.2

A clinical psychologist treating adult patients with severe dental anxiety

by Ulla Wide, licensed psychologist, Clinic of oral medicine, Public Dental Service, Region Västra Götaland, Sweden

I work at the Clinic of Oral Medicine, Public Dental Service. My assignment includes anamnestic interviews, treatment planning, and delivering individual CBT for adult patients with severe dental anxiety/phobia. I work in a multiprofessional team with dentists, dental nurses, and dental hygienists, with regular team meetings and collaboration for both the assessment and the treatment of patients.

When I meet a new patient, the patient has already met a dentist for an anamnestic interview (no clinical examination) and has answered screening questionnaires, now available to me. Two hours are scheduled for my interview, including time for administration. Usually, patients react with strong emotions, both anxiety and sadness, but also with hope on realizing that help exists. After the interview, I meet the dentist to plan for both CBT and dental treatment, including managing acute oral treatment needs. Since most patients have a deteriorated oral status, the CBT and dental treatment must be sensibly integrated. Our primary goal is to cure patients' severe dental anxiety/phobia.

The exposure-based CBT is adapted for each patient following a behavioral functional analysis and includes progressive relaxation and cognitive restructuring. Many patients also need trauma-related interventions, self-assertiveness, and applied tension techniques. I meet the patient for eight 50 min sessions, for 2–3 months, at the dental clinic in a fully equipped dental room. Graded exposure, the most important CBT intervention, is achieved using the dental room with all instruments available. However, most important is the use of film scenes of a non-dentally anxious individual undergoing dental treatment. My patient views the scenes sitting in the dental treatment chair, and I sit beside, sharing the view. The last session includes a prevention program and planning of the continued treatment with the dental team and, thereafter, referral to general dentistry. I deliver the eight-session CBT in one sequence, and, thereafter, the patient (without the psychologist) attends dental treatment with the dentist who performed the assessment. The dental treatment is a form of behavioral experiment, in CBT terminology.

12.4.5 Common Reactions in Scared Patients

Patients can be perceived as difficult or demanding if you do not understand why they react as they do. To react adequately, it is important to understand some of the most common patient reactions.

Patients who cancel: Patients who delay or cancel treatment sessions as avoidance strategy enhance development and maintenance of dental anxiety.

Patients who are angry and/or naughty: When the anxiety levels are high, it is difficult to distinguish between anger and fear. Milgrom characterized a group of dental anxiety patients as "goers but haters" [31]. These are patients who from the very beginning express aggressiveness such as starting the conversation with "I hate dentists." Some patients do not acknowledge their anxiety. They say "I'm not afraid," while their body language expresses anxiety.

Patients who are suspicious: Patients who have a complex case of dental anxiety often are distrustful of dentists. Dental health staff can be accused of evil intent, which can be perceived as highly unreasonable. It is useful to remind yourself that the underlying feeling may be anxiety and that the patient very rarely has a desire to be "difficult." Other patients are suspicious of almost everyone they meet as part of their personality or personality disorder.

Patients who cry: Crying is an emotional expression that may feel shameful to adults. However, it may be helpful to cry when in need of it, and dental professionals should be emphatic and always say, "It is totally OK to cry" or feel free to ask an open question about how patients want their crying to be taken into account. This is highly individualized. Some patients think that it is okay to keep going with the treatment even if they cry, whereas others need time to reconsolidate. The main thing is to make crying harmless.

Summary

Adequate psychological management of dental anxiety is important to treat and prevent anxiety and, consequently, to prevent poor oral health. Whatever the method, the patient rarely gets completely rid of his/her anxiety but can learn to endure, understand, verbalize, regulate, deal with, and live with it and not let it control the patient's choices. Treatment may be successful, but the risk of relapse is relatively high.

- The more knowledge about anxiety treatment, the better the treatment that can be offered and the safer the patient and the dentist feel.
- The dentist–patient relationship has a decisive impact on the results of dental anxiety treatment and must have high priority.
- The patient should be in "the driver's seat" and given control over his/her treatment situation.
- An individual coping plan is a useful and time-efficient tool.
- Explain–tell–show–do provides predictability and control throughout the treatment.
- Sedation should never be used alone but as a supplement to psychological management of dental anxiety.

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