



MASTEROPPGAVE

**Introducing dental local
anaesthesia using a
standardized cognitive
behavioural technique.**

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Abstract

Background; A major dilemma is that pain free dental treatment using local anaesthesia (LA) is of main importance for avoiding dental fear and anxiety (DFA) at the same time as intraoral injections are strongly associated with DFA. Well-educated dentists and dental hygienists, with a variety of techniques and approaches available, are important to give the patient receiving LA a perception of control.

Objective: The purpose of this study was to see if clinicians in Norway have heard about, and uses, the steps of anaesthesia (SA) or other forms of cognitive behavioural therapy (CBT). Are there any differences between clinics with (university clinics) and clinics without students from the University in Tromsø in external practise?

Methods: A questionnaire was sent out using Questback.com to dentists and hygienists in selected clinics in Northern Norway.

Results: From 106 recipients, 71 respondents (67%) answered the questionnaire. 59% was dentists and 41% dental hygienists.

Conclusion: Both CBT and SA are well-known concepts among Norwegian dentists and dental hygienists. There is widespread use of CBT, but only 14% use SA often. SA are mostly used on children, patients with dental anxiety and patients who have not gotten anaesthesia before. Dentists used SA significantly more than dental hygienists, and those who used the SA were in general satisfied with the results.

There were no difference in knowledge and use of CBT and SA among clinics that had or did not have students from the University in Tromsø in external practise.

Introduction

Fear and anxiety for dental procedures is a common complex phenomenon difficult to deal with for the patient as well as for the dental personnel. A recent review article concludes that DFA affect around 10% of the child and adolescent population (1). This problem however, affects adult patients as well as children. In a Norwegian study on 18-year olds the level of dental fear has been reported as high as 20% (2). Dentally anxious adults reported an early onset of their anxiety already during childhood (3).

Pain, lack of information and poor perceptions of control are important features influencing fear, anxiety and behaviour. Evidence are now accumulating that painful previous experiences during dental treatment is a major factor influencing levels of dental anxiety (2, 4), and frequent cancellations and missed appointments (5), as well as lower rates of utilization of dental care among adults (6). This stresses the importance of pain free dental treatment of children and adolescents and the use of LA. At the same time, intra-oral injection phobia is strongly associated with DFA in both children and adults (7-12). Fear of injections has been reported as one of the most common sources of dental fear in childhood (10). 41% of 6-8 year old Danish children are fearful of injections with LA (13).

The psychological literature shows that perceptions of uncontrollability contribute to anxiety and other pathologies, while interventions that enhance child perceived control has been shown to reduce anxiety (14). In a study of blood drawing, children with lack of perceived control interfered with the procedure more than those with a perceived source of control (41% versus 13%) (15). Mahajan et al. (1998) in a study of gastrointestinal endoscopy found that psychological preparation, sensory and procedural information resulted in less child anxiety than those in the control group (16). Other recent reports with informational intervention components were found to reduce distress and increase child cooperation (17,18).

CBT (in the literature also referred to as behaviour management therapy) is an important tool in managing patients with dental fear and anxiety, as well as in order to minimise the possibility that patients might develop dental anxiety. Tell-show-do (TSD), introduced by Addeleston in 1959, is the corner stone of CBT used by dentists. Time spent per child has diminished when compared with the period before the approach was introduced (19). A study of systematized "behaviour shaping" concluded that dentists can be trained to obtain significantly increased positive acceptance of dental treatment in children, and that the

method does not require extra time in the dental chair (20). A study of changes in blood pressure in children undergoing psychological treatment before dental procedures showed that the application of the TSD method in children undergoing dental procedures had a significant effect on blood pressure during or after dental treatment (21).

When introducing LA the procedure includes several steps on the way to the delivering of full anaesthesia. No dentist or dental hygienist perform this technique in exactly the same way and the different steps and order in this “behaviour-shaping staircase”, in the following called the Steps of Anaesthesia (SA), must be adapted to the individual situation. The essence is shown in figure 1.

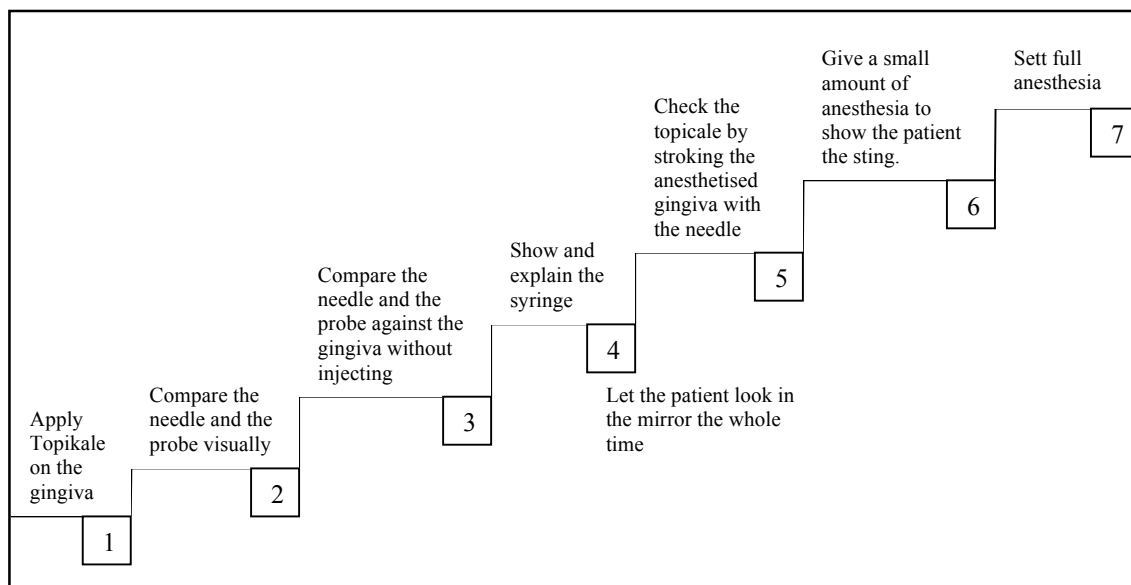


Figure 1:

1) Topikale is applied. 2) Visual comparison between the needle and the probe. 3) Visual and tactile comparison between the needle and the probe on the patients' gingiva. 4) Information and visual inspection of the syringe. 5) Confirmed topical anaesthesia by gentle touch with probe and/or needle at the anaesthetised gingiva. 6) A small test-drop of anaesthesia is injected to show the patient how it feels. 7) Giving full anaesthesia.

Step 6 and 7 can be joined if the patient is mature enough for it. The patient will have the opportunity to observe in a hand-held mirror from the beginning to the end of the process. All

steps are performed with emphatic presence and encouragement, and with a mutual trust between the patient and the dentist/dental hygienist. The patient is exposed step by step to potential anxiety-provoking procedures where each step creates a moderate increase in stress and fear. The patient is kept in this exposure situation until he or she experiences a decrease in fearful reactions. A feeling of ability to cope with the stimuli is thereby created. If the exposure is interrupted before the fear decreases, the level of fear increases and creates a feeling of defeat and lack of coping. The steps must be adapted to the individual situation and with some patients it is necessary to use more than one appointment to complete all the steps. It is very important that every session is ended with praise and a positive sense of achievement.

The aim of this study was to find out: A) Have dentists and dental hygienists in Norway heard about SA or other forms of CBT? B) Do they use SA and are they satisfied with its results? C) Are there any differences between clinics with (university clinic) and without dental students from Tromsø in external practise?

Material and method

A questionnaire was sent out using Questback.com to dentists and dental hygienists in selected clinics in Northern Norway. Every dental health district in the counties of Nordland, Troms and Finnmark was included in the study. From each dental health district 3 clinics were selected, where one had to be a University clinic with dental students from The University in Tromsø in external practise. Only clinics of a larger size with several dentists and dental hygienists were selected. Both dentists and hygienists at the clinic were recipients of the questionnaire, as both groups use anaesthesia in their daily work life.

There were 106 questionnaires sent out through Questback.com to e-mail addresses gotten from the office of the County Dental officer in each county. 3 reminders were sent out by e-mail to those who had not answered. The questionnaire consisted of 18 questions with yes/no answers, or a 4 point scale of alternatives (“Yes, often”, “Yes, some times”, “in special situations”, and “No, never”). All questions except three were made mandatory. At one

question (“on which groups do you use the SA?”) it was possible to answer all the alternatives.

To further investigate if the clinicians used one or more steps from the SA without being aware of it, specific questions were made. E.g. do you use “surface-anaesthesia” like Topical before injecting LA?

Three of the dental hygienist that got the questionnaire returned it blank because they did not use anaesthesia on their patients and therefore did not feel like they could answer the questionnaire. They were excluded from the study. These were those known not to use anaesthesia, but it was possible that additional dental hygienists did not use LA in their daily work, and still answered the questionnaire.

For statistical analyses Pearson’s chi-square test was used (IBM SPSS Statistics 19), and the level of significance was set at $p \leq 0.05$.

Results

From 106 recipients, 71 respondents (67%) answered the questionnaire. Of those 59% were dentists and 41% dental hygienists. 75% of the respondents were women. 73% were educated in Norway, the rest abroad. 31% had been working between 0-5 years, 18% between 6-10 years, 21% between 11-20 y and 30% over 20 years.

96% of the respondents had heard about CBT and 83% of the responders had heard about SA. 85% of those who had heard about CBT also had heard about SA. Only 1 person had only heard about SA and not CBT.

Table 1. The usage of different steps of SA.

Table 1	Yes, often	Yes, sometimes	In special cases	No
Do you use Topical anaesthesia before you give anaesthesia?	35	18	16	2
Do you show and explain the syringe to the patient?	28	17	22	4
Do you compare the explorers tip and the needle of the syringe visually for the patient	8	13	13	37
Do you let the patient feel that the topical anaesthesia has worked by scratching the gingiva with the explorers tip?	23	14	14	20
Do you give a small amount of anaesthesia to let the patient feel sedated before you give a full sedation?	8	11	22	30
Do you let the patient look in a mirror while giving anaesthesia?	3	5	18	45

91% of the respondents answered that they used CBT and 74% that they used SA. Table 1 shows how often the different steps of SA were used, and it is clear that not all the steps were equally used. Most of the responders used topical anaesthesia, but very few let their patients look in a mirror while giving the injection.

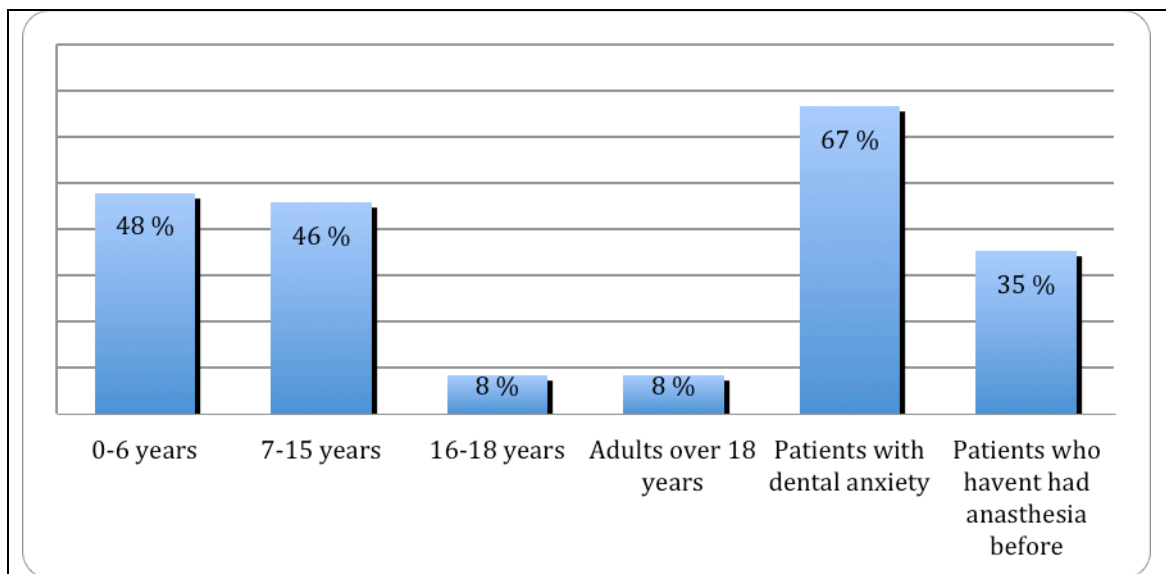


Figure 2 “If you use the steps of anaesthesia, witch group of patients do you use it on? The respondents could mark multiple alternatives at this question.

The users of SA used it on patients with anxiety, children between 0-15 years and on patients who had not received LA before (Figure 2).

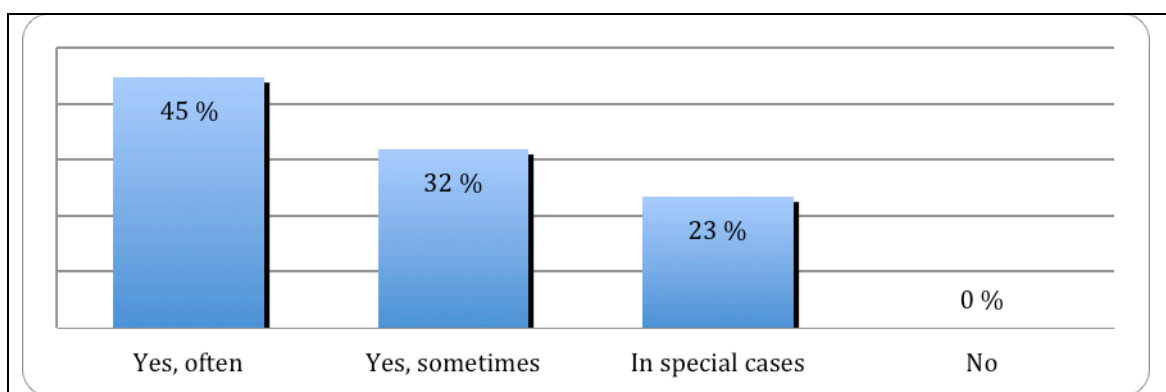


Figure 3. Do you think you get good results when you use SA?

As many as 77% answered that they got good results often or some times when using SA. No one answered that they never get good results (Figure 3).

Almost all the respondents who had studied abroad had heard about CBT and SA (Table 2). 14 out of the 19 who had studied abroad used SA, in contrast to 34 out of 52 who had studied in Norway. This difference, however, was not statistically significant (Table 3).

Table 2. The respondents answer to the question: Have you heard about SA.

Table 2	Have you heard about SA?		<i>p-value</i>
	Yes	No	
University clinic	39	8	NS
Not university clinic	20	4	
Educated in Norway	43	9	NS
Educated abroad	16	3	
Dentist	37	5	NS
Dental hygienist	22	7	

There was no significant difference between the university clinics and the other clinics whether they had heard about, or used, SA or not. The same counts for how long they have been in their profession and where they have been educated. The only significant difference was that dentists used the SA more often than the dental hygienist (see Table 3).

Table 3. The respondents answer to the question: Do you use SA.

Table 3	Do you use SA?		<i>p-value</i>
	Yes	No	
University clinic	31	16	NS
Not university clinic	17	7	
Educated in Norway	34	18	NS
Educated abroad	14	5	
Dentist	33	9	P < 0.05
Dental hygienist	15	14	

Discussion

The response rate was 67 % of 106 questionnaires sent out. 75% of these were women, but this difference in the distribution of sexes among the responders was because there originally was a majority of females in the sample. The majority of the participants had heard about both CBT and SA independent of how long they had been in the occupation, where they studied and if they were dentists or hygienists. This could be because those who answered the questionnaire were more interested in this subject than those who did not answer. But it may also be because dental personnel think of SA as any type of stepwise approach to introducing LA. The results presented in Table 1 were suggesting the latter.

Over 50% of those who answered the questionnaires had students in external practise. This may be due to two things. The university clinics were larger in size and/or had a more frequent contact with the University and possibly generated a higher response rate.

Surprisingly there is no significant difference between knowledge about SA and whether the clinic is a university clinic or not. It could be expected that the clinicians working in close contact with students, and the University who teaches this technique, would have more knowledge about SA.

Almost all of the responders had heard about CBT, and 47 % answered that they used it often, while only 8% of the responders did not use CBT. Most of the responders had heard about SA, however, only 14% answered that they used it often and 26% did not use SA at all. As many as 77% answered that they got good results often or some times. No one answered that they never got good results. There is reason to speculate why the SA was not used more often when most clinicians were satisfied with its results. A study of attitudes of Swedish dentists to pain and pain management during dental treatment of children and adolescents concludes that Swedish general dentist practitioners under-use LA, analgesics and sedatives during dental treatment of children and adolescents. Many dentists found it stressful to give LA to preschool children. There is need for continuing education concerning pain management and an intensified discussion of attitudes to pain and pain management when treating children and adolescents (22).

A major dilemma is that the use of anaesthesia is of utmost importance because pain free treatment is a key in prevention of development of fear and anxiety and at the same time it is one of the most common causes to the development of fear and anxiety. Studies indicate that

there is an overlap between dental anxiety and Blood-injury-injection phobia (BIIP) (23-27). BIIP is unique compared to other specific phobias because of a characteristic vaso-vagal response with a strong tendency of fainting when the patient is exposed to the phobic stimuli. The phobia seems to have a strong genetic component (28, 29) and is more prevalent among children and adolescents (30). Because children suffering from BIIP may need adjusted BMT to prevent fainting, they should be asked about their previous experiences of negative bodily sensations related to vaccine, needles and blood (31). It is estimated that about 3.5-4.0% of the population suffers from BIIP (32, 33). Milgrom et al, found that 4.6% of an American sample suffered from fear of intra-oral injections (9). Agras et al, reported the incidence of what they called common fears of injection to be about 13% among 10- and 20- year-olds (30). In a previous study among adolescents in Norway, there were found that the prevalence of self-reports of fainting and almost fainting during a dental or medical injection was 17% in this age group (34). Children with dental anxiety and strong anxiety response when exposed to an oral injection may in fact suffer from BIIP (31). In the same study of fear of blood, injury, and injections, and its relationship to dental anxiety and probability of avoiding dental treatment among 18-years old in Norway, there were found that 11% of the subjects with dental anxiety and subtypes of BIIP, respectively, reported high probability of avoiding dental treatment in situation where a dental injection was possibly needed (31).

CBT used on already anxious or fearful patients is named desensitisation. Many studies have reported successful CBT of specific phobias, often with 8-11 treatment sessions (35). Vika et al, found that most (89%) patients diagnosed with intra-oral injection phobia can be treated successfully by dentists trained in CBT and thereby manage to receive intra-oral injections from an other dentist during 1 yr of follow-up (36).

In other words, regarding local dental anaesthesia SA should be used for behavioural shaping as well as for desensitisation. This was also the case in the present study where most of the respondents answered that they used SA mainly on children, patients who had not received anaesthesia before, and patients with dental anxiety.

Conclusion

Both CBT and SA were well-known concepts among the dentists and dental hygienists participating in this study.

It was a general use of CBT, but only 14% used SA often.

SA was mostly used on children, patients with dental anxiety and patients who had not got anaesthesia before.

The dentists and dental hygienists who used SA were satisfied with the results. No one answered that they did not think they got good results.

There were no difference in knowledge and use of CBT and SA among clinics that have or not have students from the University in Tromsø in external praxis.

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