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"Dental treatment with the use of general anaesthesia in adult patients suffering from odontophobia in private practices in Oslo"

A qualitative study

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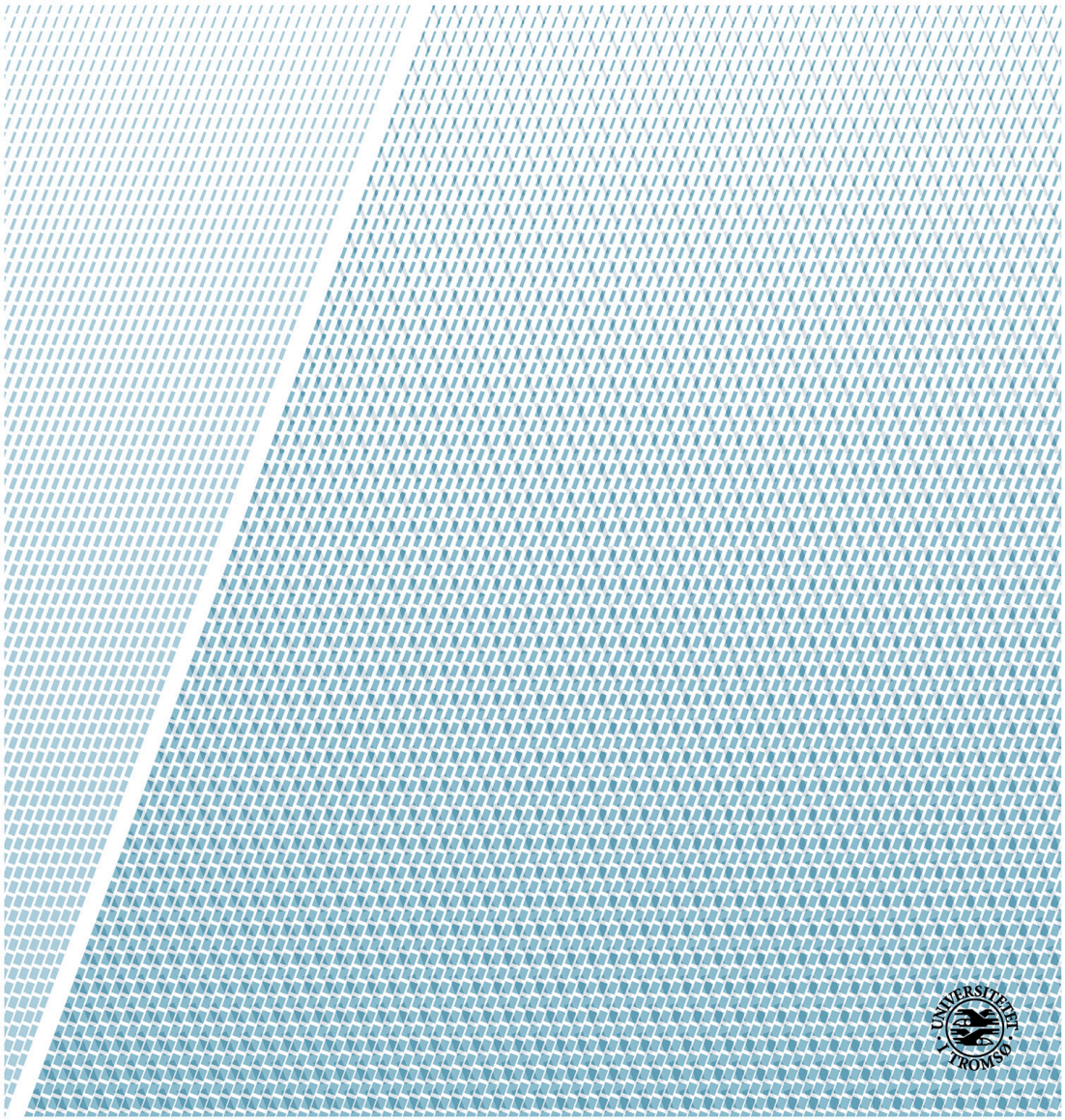

Contents

1. Abstract

Dental fear, anxiety and phobia are common problems in dentistry. Adult patients suffering from severe dental anxiety, odontophobia, often avoid dental treatment altogether. For some of these patients treatment under general anaesthesia might be one of few available options for necessary dental treatment. This study investigates the procedures and practices of two private clinic offering treatment under general anaesthesia, as well as the experiences of patients undergoing treatment under general anaesthesia.

Based on observation at the clinics it was found that the clinics in question used specialized equipment and cooperated with an anaesthesia team of doctors, nurses, oral surgeons and psychologists. Both clinics showed good patient care and an understanding of their situation with a strict cognitive follow-up plan for the patient in question. Operative treatment under general anaesthesia was avoided if possible and only considered as a final option.

Interviews were performed with patients before and after treatment under general anaesthesia. The total absence of dental care led to severe tooth decay, which in turn complicated their social life besides being extremely painful. It was essential to eliminate the pain and take their anxiety seriously. It was important for the patients to have the dentist and the staff understanding how they felt throughout the entire procedure. The main part of this study was to analyze the patient's interviews and to document their experiences. This includes how these patients manage their fear and phobia before the procedure, and what kind of expectations they had for the final result. It was also important to facilitate an annual follow-up plan for each individual patient post operation.

2. Introduction

2.1 Odontophobia

Dental phobia, also called odontophobia, is a term used for patients that experience high levels of fear and anxiety related to dentistry and receiving dental care. The prevalence of people suffering from some degree of dental anxiety is estimated to be about 20% of the population (1-3) while only 4% comes under the diagnostic category of odontophobia. Data on patients suffering from odontophobia can be hard to collect because these patients often avoid dental care completely, and the avoidance of dental care is a defining feature of odontophobia (4).

Patients with odontophobia experience anxiety when exposed to stimuli, which reminds them of the treatment situation or particularly feared aspects of the situation. This might cause panic attacks, and the phobic situation is entirely avoided, or endured only with an immense amount of anxiety.

A patient who suffers from odontophobia often experiences a decrease in general quality of life, which affects the individuals' psychological and social status (4). Mental disorders are classified by two major nosological systems, the ICD-10 and the DSM-IV-TR, consisting of different diagnostic criteria. Odontophobia is a diagnostic criteria listed as *DSM-IV 300.29 or ICD-F40.2*. *DSM-IV-TR* is mainly used in research while *ICD-10* is widely established in clinical practice in Europe (5). Only a specialist in psychology of psychiatry has the authority to properly diagnose the patient.

2.2 Symptoms of odontophobia

The development of dental anxiety and fear is often multifactorial where both conditioned stimuli and cognitive processes interact with personality and other concomitants factors. When dental fear is established, especially with a phobic avoidance behavior, it may create oral health problems as well as psychological problems for the patient (2,6). Patients with odontophobia usually suffer from insomnia the night before the dental appointment. Their anxiety gets worse, sometimes unbearable while waiting in the waiting room at the clinic. They feel sick and the typical reactions include vomiting, getting nauseous, being stressed, and sweating. The thought of direct contact with the dentist and the dental equipment makes it hard to keep calm, or makes difficult to maintain normal breathing (7,1).

2.3 Treatment models

Treatment models for odontophobia can combine behavioural and cognitive therapeutic techniques, and most often this is done through use of Cognitive Behaviour Therapy (CBT). In addition, in working with anxious patients it is important to note that a major factor in successful treatment is trust (8). Specialized behavioral treatments include teaching the patients relaxation techniques such as deep diaphragmatic breathing, relaxation of muscles and guided imagery. In addition to behavioral techniques however it is often necessary with cognitive therapy in order to achieve a satisfactory result concerning the dental treatment (9,2).

Exposure therapy includes various techniques designed to diminish conditioned fears by repeatedly exposing a patient, in the absence of an adverse experience, to stimuli associated with stress. For a patient with dental anxiety, the items at the low end of the hierarchy might be thinking about calling to schedule a dental appointment, or imagining getting ready for a dental appointment. Items at the high end of the hierarchy might include imagining lying in the chair receiving periodontal treatment as well as past experiences. The final stage depends on the belief that anxiety and deep muscle relaxation are incompatible responses (10).

Most patients will respond positively to behavior therapy. There are, however, some patients who will not be able to follow this type of therapy due to the severity of their symptoms (11-14). These might be for instance severely traumatized patients who have experienced violence, trauma and abuse earlier in life. In some cases, CBT, combined with pharmacology sedation therapy such as nitrous oxide, might help in order to achieve a good result. Other patients, who are unable to participate in treatment despite of CBT and sedation, can be considered for dental treatment while under general anaesthesia (15).

2.4 General anaesthesia

General anaesthesia (GA) is a state where the patient is fully unconscious (16,17). Patients with dental anxiety in need of large and complicated dental treatments qualify for getting treatment GA. Documentation that GA is the only way that will allow the patient to undergo treatment will enable the patient to be reimbursed the costs for anaesthesia (18,19). A GA session may be very useful in completing the most challenging dental procedures, like complicated surgery.

Patients with odontophobia can request dental treatment under GA. Even if GA is effective in completing dental operative procedures, it is known to cause little to none improvement on the patient's dental anxiety disorder. It is important to explain to the patient that this sort of treatment is only a temporary solution, and that neither the dentist nor the patient lose sight of the underlying problem of dental anxiety (20).

Because the amount of sedation and general anaesthesia affect each patient individually, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to diagnose and manage the physiologic consequences (rescue) for patients whose level of sedation becomes deeper than initially intended (21,22).

For all levels of sedation, the practitioner must have the training, skills, drugs and equipment to identify and manage such an occurrence until either assistance arrives (emergency medical service) or the patient returns to the intended level of sedation without airway or cardiovascular complications. It is also important inform the qualified patient in question about all the details concerning each step up the GA (15-19). The patient's ability to maintain ventilator function under GA is often impaired by the drug.

2.5 Risk in anaesthesia

Modern anaesthesia is associated with a risk of serious complications. Optimization of the patient's preoperative health is important to improve safety. Systems and routines for improved safety must also take into account that human and organizational factors may cause anaesthetic accidents.

Healthy patients morbidity rate is 1:250 000, while medication errors occur in 1:1 000. The risk of awareness during general anaesthesia is 1:650. Pulmonary related incidents occur in 1:7 000. Cardiovascular and respiratory systems failures are the most critical anaesthetic complications. Human errors and organizational factors cause an estimate of 50-70% of these cases. Optimization of the patient's preoperative health is important to improve safety. Systems and routines for improved safety must also take into account that human and organizational factors may cause anaesthetic accidents. (21-23)

3. Research questions

Since adult patients seeking dental treatment under general anaesthesia are not prioritized in the public sector, the waiting lists are often long in the region of Oslo and

Akershus (24). The operations are performed at the hospital, which prioritize other medical patients before patients suffering from dental anxiety. Children, adolescents or elderly patients with dental problems have first priority according to degree of severity. This makes an investigation of the experiences of adult patients in the need of an offer in the private sector interesting, since this patient group is not prioritized elsewhere.

Observation was undertaken by the author in order to describe and compare standard procedures concerning general anaesthesia in different clinics. Also, information about requirements and qualifications for receiving treatment under general anaesthesia would be collected.

The main part of this study was to interview the patients who came to schedule an operation under GA at the clinics, and to document their experiences. This includes how these patients manage their fear and phobia before the procedure, and what kind of expectations they had for the final result. This was done by conducting interviews with patients who underwent dental surgery under GA both before and after surgery.

Improved understanding of the feelings and thoughts of these patients, combined with further knowledge concerning treatment under general anaesthesia and odontophobia, is important in order to train and educate future practitioners.

4. Materials and methods

The interviews were completed during the year of 2014. During the summer of 2014, observation through volunteer work and patient interviews were performed before and after treatments under general anaesthesia at two different private clinics in Oslo. Four patients gave their consent to use the interviews in this assignment. All patients were at the age of 21 or older, and they were treated while under general anaesthesia.

An observation was held prior to the operation itself. In order to compare the procedures under GA at each clinic, consent forms signed by the patients and by the anesthesiologist were collected and evaluated. The stationary equipment used for treating patients under GA were inspected and compared as well. The anesthesiologist in charge of the GA was present at all four individual operations. All data concerning the differences in between the clinics were presented to the anesthesiologist a head of the operation day and discussed. Documentation during the consultation with the patients consisted of taking intra and extra oral pictures as well as assisting the dentist. Under the GA operation, documentation was made by video taping with a camera.

4.1 Pre-operational interviews

All of the interviews were approved by both the dentist in charge of the procedure and by the patients. All patients had to give consent, either by signing a letter at the clinic, or by e-mail.

In order to get information about the patient's feelings and mind-set immediately before surgery, the interview was performed as close to the surgery as possible while the patients were waiting for the procedure to begin. The patient interviews were held approximately one or two hours before the operation started. The questions that were included in the pre-operational interviews are listed in Table 1.

Table 1. Questions from the pre-operational interview.

1.	*"Why did you choose to get treatment under general anaesthesia?"*
2.	*"Are you concerned about the financial aspect of these procedures?"*
3.	*"How do you feel now before the operation?"*
4.	*"Are you scared?"*
5.	*"What are your expectations for the results when you wake up?"*

4.2 Post-operational interviews

A few weeks after the operation, a follow-up interview consisting of five new questions were held to investigate how the patient felt after undergoing anaesthesia. The questions that were included in the post-operational interviews are listed in Table 2.

Table 2. Questions from the post-operational interview.

1.	*" How do you feel now?"*
2.	*"Do you still struggle with your oral health?"*
3.	*"How did the first revisit in the dental chair go?"*
4.	*" How did the dental expenses affect your economy after the procedure?"*
5.	*"Did the dental treatment meet your expectations both socially and esthetically?"*

The interviews were recorded using tape recorder hours prior to the operation, and the interviews were then analysed using thematic analysis. The intent was to gain insight into the

inner feelings of a patient in their phobic situation. Discerning their views on their diagnose, or the communication between staff and patient, expectations and financial aspects.

Qualitative research in primary care deepens understanding of phenomena such as health, illness and health care encounters. Many qualitative studies collect audio or video data, and these are usually transcribed into written form for closer study (25).

Thematic analysis is the most common form of analysis in qualitative research. It is a poorly demarcated, rarely-acknowledged, yet widely-used qualitative analytic method within psychology (26). Thematic analysis is also related to phenomenology in that it focuses on the human experience subjectively. This approach emphasizes the participants' perceptions, feelings and experiences as the paramount object of study. Rooted in humanistic psychology, phenomenology notes giving voice to the "other" as a key component in qualitative research in general. This allows the respondents to discuss the topic in their own words, free of constraints from fixed-response questions found in quantitative studies (27).

5. Results

The research questions revealed that there was a strict policy concerning the criteria for GA treatment. The main reasons to why patients required treatment under GA proved to vary, although all patients suffered similar experiences earlier in life. The interviews gave an insight into the patient’s feelings hours prior to the operation and a few weeks after.

5.1 Requirements and qualification for general anaesthesia

Based on the observation at the clinics information about the requirements and qualification for general anaesthesia was collected and analysed. Both clinics recommended that general anaesthesia for dental treatment in adults must be used as a last resort and only used when all other forms of treatment have been failed. At both clinics, treatment under general anaesthesia was used only when the patient could not be treated with Benzodiazepines or cognitive therapy without feeling anxiety and stressful. It is important to recognize that each general anesthetic procedure carries a certain amount of risk (21,23).

Prior to planned operation or procedure, the anaesthetist reviews the medical record and/or interviews the patient to determine the best combination of drugs and dosages and the degree to which monitoring will be required to ensure a safe and effective procedure. Key factors of this evaluation are the patient's age, body mass index, medical and surgical history, current medications, and fasting time. The patient could not suffer from a chronic condition

such as cardiovascular disease, diabetes or another severe chronic diseases. The patient also could not be morbidly obese. The patients also needed to have the economy to pay for the treatment. Patients needed to pay prior the their operation in order to get an appointment with the surgical team. Up to 80% of the total amounth could later be refunded from Helfo.

5.2 Results from the pre-operational interviews

Fear of "the diagnosis" was proven to be overwhelming and prevented most of the patients from seeking help. The prospect of not being able to cope with "the bad news" or the shame of the total lack of oral hygiene was terrifying to them.

"I have never felt safe at the dentist before, no one has ever taken me or my problems seriously." – Patient B

Some patients felt that there was some lack of information in all the steps before getting in the chair and receiving the GA. Two out of four patients felt this to be unnerving. One of the patients was not properly informed ahead of the procedures. One of the clinics failed to give proper information details prior to the operation. This made one of the patients experience an increase in stress before the procedure:

"I got stressed over the fact that I needed to wear this sterile underwear and scrub cap before getting ready for my operation. Nobody told me about this, and this is just one more thing that made me lose the feeling of being in control. I know it is just a minor detail for the surgical team, but to me, it`s really not." – Patient B

Some patients were concerned with the risks of being put under GA whereas others were just happy to get it over with. None of the patient felt directly scared of the GA itself.

" The facts that I will be under GA have never been scary to me at all. To have to get treatment while being conscious while having this constant, all-consuming pain that I have lived with the last two years scares me so much more than the risk of GA." – Patient A

What the patients all had in common was their confident in their operative team. Even though two out of four surgeries were delayed with more than one hour, the patients did not

have any complains. They all agreed upon the fact that they were more interested in finally getting rid of the high levels of pain they were experiencing rather than the fear of the GA itself.

"I am nervous, but happy at the same time. I am just looking forward to everything is over, until I wake up from GA and can go home. I trust both my dentist and her team of doctors and nurses. I know they`ll take care of me while I am asleep, and I know they will do their best. I just want to sleep." – Patient D

"I feel calm, but I am impatient for it to begin. I have waited for so long, and today I am finally here. " – Patient B

"... For me, it was never an option to sit in the dentist chair for several hours 3-4 times a week in order to treat my teeth properly. I had to get treatment under GA, that was my absolute last resort. It can only be better then it is right now, to me it is not important to have good-looking teeth as long as they can get rid of my toothache. As long as I will be able to chew, talk, eat my food and brush my teeth without pain it will be worth everything. Nothing else matters. " - Patient A

All of them were overwhelmed to find that they qualified for treatment under GA, and for getting some amount refunded from Helfo (18). This was essential due to the fact that they had claim to almost 80% refund due to their diagnoses.

"I`ve been saving money for over a year, finally I can afford to this operation. I was also told that I qualified for a refund, which is amazing! I had no idea this was possible!" – Patient A

".. I felt kind of lost before I finally got declared for surgery under GA, the feeling of having no way to escape from the pain made my life a living hell. I could not function at all, I used all my energy on keeping my self together." It was frustrating, feeling that my teeth were in control of me and that I did not have the strength, support nor money to do anything about it." – Patient C

All of the patients also had great expectations concerning the finished results.

" I was recommended to get treatment at this clinic by a friend who got treated by the same dentist who is going to fix my teeth. My friends esthetic results were unbelievable, I could not believe that they were not the real thing." – Patient C

" At this point in my life, my teeth has never looked worse, they are so ugly and so painful that everything will be better than it is at the moment. I never smile to anybody anymore, I don't want to scare them." – Patient A

5.3 Results from the post-operational interviews

All of the patients were interviewed a few weeks after their operation was completed. Most of the patients were satisfied with both the treatment and with the results. One out of four patients felt that the dentist and the anesthesiologist could have given better information concerning all the steps of the procedures in front of the operation day. All patients claimed that they had fewer problems with their oral hygiene after their treatment under GA.

"… For the first time in years, it is not painful having to brush my teeth anymore. Before I used to cry whenever I tried to brush my teeth. It feels unbelievable…" – Patient A

The patients experienced some level of anxiety when they all went for their first follow-up appointments after their operation. There were a decrease in anxiety, but it was not gone. Two out of four patients needed oral sedation or nitro-oxide gas in order to complete their treatment.

"…. I am still scared, I still get anxiety and panic attacks, but at least now I have found a practitioner who takes me seriously, I feel safe and in charge." – Patient D

"I was nervous but the entire team made me feel calm and safe. I was tired but I did no longer feel the stress of having to deal with all problematic teeth anymore. It was relieving." – Patient C

None of the patients felt that their main problem, their severe dental phobia, was cured after being treated under GA.

"…Even though I needed nitro-oxide in order to finish my prosthodontics treatment, I felt

more relax while in the chair. I was nervous before leaving home, the anxiety is still there, but not as strong as it used to be. Being treated with nitro-oxide made me feel like the appointment lasted for only 15 minutes, even though I was in the chair for several hours."– Patient A

The estimated results of the treated teeth were met; all patients were extremely satisfied with their final results. The patients regained more self-esteem shortly after treatment. All patients felt that their dentist had done a great job, as shown in the following statements taken from the patients:

"I knew my teeth would look healthier after the operations, but this exceeded expectations. I have gotten my smile back, and my confidence!" – Patient B

Those patients who suffered from pain prior to the operation found themselves relieved of their toothache following the operation.

" I felt like I was alive for the first time in a while. I feel like I have gotten my life back. The pain is gone, and I have teeth! I have energy to go out, to be social, to live. I never had that before, all my energy went on the constant toothache." – Patient A

"I wish I could have done this operation earlier, but I couldn't afford it until now. This treatment was extremely expensive, I needed to get a loan in order to pay for it all. But, it was worth it though!" – Patient D

6. Discussion

The most essential part in helping patients with dental anxiety is through establishing trust between the patient and the dental team (28). Through conversation it might be possible to discern their limitations and boundaries, but also their ability to progress and adapt. This will lay the foundation on which one would build a treatment plan. As a dentist, it is important to understand the patients history and the individual`s needs.

One has to acknowledge that patients might view dentists as authority figures. In fragile and vulnerable patients, negative evaluation from an authority such as a dentist could result in an increase of self-loathing, which was the case for all patients in this inquiry. Furthermore, one must also take into account the invasiveness and intimacy of these procedures. Patients who have had past traumatic oral related experiences sometimes suffer from symptoms typically reported by people with post-traumatic stress disorder (PTSD). PTSD is characterized by intrusive thoughts of the bad experience and nightmares about dentists or a multitude of oral situations (29).

An early experience with dental treatment appears to be highly relevant for the development of dental anxiety and phobia (30). The patients confirmed that early childhood memories at the school dentist had partially caused their current dental anxiety, which made them completely avoid seeking professional dental care in the years to come. If the necessary trust is not achieved, the treatment will never be optimal for the patient. It is therefore essential to break the negative pattern. Patients, who feel safe in the dental environment from early childhood on, might have a better chance to build positive relationships with dentists later in life. Even though the patients that were interviewed varied in age and background, they all felt confident in the offered treatment. All patients said they experienced reduced levels of dental anxiety, but the anxiety issue still persisted post-anaesthesia. Those patients with a lot of dental pain prior to the operation were relieved to discover that the procedures lowered their pain as expected. They all felt safe in the hands of the dentists before they underwent general anaesthesia treatment. It shows that the connection between dentist and patient is essential before any treatment plan is made. A safe or safer environment at the clinic is one of the key findings in treating patients with dental phobia (31).

After surgery in GA, all of the patients showed an improvement in their ability to handle further dental treatments and recalls. All patients were pain-free only weeks after their operation. Overall, the treatment of these patients under GA showed to be successful concerning pain elimination and restoring a functional dental status. Those who earlier had

struggled with their oral hygiene at home experienced an increased feeling of self-esteem after a few weeks. Prior to the operation, the patients suffered from low self-esteem when looking into a mirror and pain related to brushing their teeth. After the operation, all of the patients found themselves able to brush and clean out their teeth at home without experiencing any pain.

There is no doubt that all of the patients were happy with the esthetical dental results. The patients' satisfaction is important to a successful outcome (32,33). Most of these patients had teeth with severe decay and composite, porcelain crowns and implants were used as replacements. So what is important for the next dental appointment in order to keep the patients satisfied with their results?

Future treatment might not be as successful as the last time, and there is a possibility that the patients might feel that future treatment cannot compare to the treatment under GA. Getting treated while in a conscious state might be too much for some to handle. This in turn could have a negative effect on the relationship between the patient and the dentist, and lead to setbacks and the viscous circle is maintained. The most important part of patients with dental anxiety and rehabilitation is to get facilitated treatment as quickly as possible, and build upon the positive progress already achieved. This was common practice in the clinics. However, it is in human nature to avoid difficult situations and especially in this patient group. Therefore, it is critical to encourage and motivate these patients to continue treatment after the initial procedures. This might not be the most profitable course of action for the dentists. Good ethics and patient care should be a health professional first concern.

The fact that the patients had large amounts of the total cost refunded might affect the results positively. Patients who receive the same quality and amount of treatment for a lower price, might be more satisfied with the results (33). Prior to the operation day they were equally concerned about the expenses prior to the treatment under GA. They never expected that they had a claim to a refund. Without a proper diagnose, these patients would not receive a refund and they would have had to pay the total amount by themselves. Now, the patients suddenly got a treatment that was less expensive than first assumed. If information concerning the refund system were more accessible, most likely more people facing these problems would consider treatment at an earlier stage. This situation could increase the quality of oral health for people with dental anxiety.

When looking at the bigger picture, the dental team could have prepared or facilitated an individually follow-up plan for each patient for coping with everyday life after the operation. Patients with dental anxiety belong to a disadvantaged group in need of annual

adapted treatment. The responsibility of further dental care and treatment lies both with the dentist and with the patients in order to keep a functional and ideal relationship. The dentists have to facilitate the dental offers, while the patients need to be responsive and motivated.

7. Limitations

The time of pre-operational interviews could influence how the respondents answered the questions. In hindsight, it could have been optimal to perform two pre-operational interviews: One at the first GA consultation weeks prior to the procedure, and one at the day of the operation. Due to lack of time and resources, an interview at the first consultation was not possible.

8. Conclusions

In the clinics included in this study, operative treatment under general anaesthesia was avoided if possible, and it was used as a last option only for those patients with lack of cooperation and control due to phobic anxiety. The process of applying and qualify for treatment under GA was long, and the anesthesiologist had the final word in declaring a patient for surgery. Even though general anaesthesia is recommended as a last resort, it proved to be of positive experience both to the dentist in charge of the operation team, and for the patient. The common practice at both clinics was the use of general anaesthesia and the very same operation team consisting if an anesthesiologist and a specialized nurse. The use of the drug Propofol was their first choice.

All patients treated under anaesthesia where suffering from odontophobia and other psychological issues. In all cases, the patients had experienced past traumatic events in their life, which in turns affected their mental and oral health. Almost all patients treated under general anaesthesia during the period year 2013/2014 were patients suffering enormous amount of pain due to the total absence of dental care. They all seemed nervous at the operation day, some more than others due to lack of information concerning the procedures. All patients looked forward to getting rid of the pain, and they were more concerned about pain management rather than the esthetics of their teeth.

The patients regained some of their self-esteem shortly after treatment, and all of them had high expectations concerning the quality of results before getting treated. Based on the patients' statements after treatment in GA their expectations appear to have been fulfilled. None of them managed to cure their dental anxiety after getting treated under general anaesthesia, and are still experiencing anxiety before their dental appointments.

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