Efficiency of Cognitive Technique in Reducing Dental Anxiety

Mihaela Adina Dumitrache\textsuperscript{a,*}, Valentina Neacsu\textsuperscript{b}, Ionela Ruxandra Sfeatcu\textsuperscript{c}

\textsuperscript{a,c}University of Medicine and Pharmacy, “Carol Davila”, Bucharest, Dionisie Lupu Street, nr. 37, 020022
\textsuperscript{b}Titu Maiorescu University, Bucharest, Calea Victoriei, nr. 187, 004051

Abstract

The anxiety experience in the dentist’s office is one of the main barriers that prevent patients from using dental services; therefore a specific strategy is needed. The aim was to determine the efficiency of cognitive technique in reducing dental anxiety. The hypothesis is that the use of cognitive restructuring for phobic dental patients will determine a significant decrease of anxiety level. Participants were 40 patients of a dental clinic in Bucharest (MDAS \geq 13). Anxious reactions were assessed with MDAS and DFS. After using the cognitive technique, the anxiety level decreased significantly both for the global anxiety index and for its components.

Keywords: dental anxiety; cognitive therapy; restructuring technique; dental anxious patients; oral health.

1. Introduction

The anxiety response is almost identical to the fear response (terms such as dental fear, dental phobia, and dental anxiety are often used synonymously and do not have agreed clinical definitions), both of them having a physiologic, a cognitive and a behavioural component. On one hand, dental anxiety has been recognised as a source of serious problems in providing dental services and working with anxious patients is considered by dentists as having negative effects on the performance of dental care and may give rise to occupational stress (Milgrom et al, 1995). On the other hand, dental anxiety leading to avoidance of dental treatment is common and appears to be associated strongly with clinically significant deterioration of oral health (Mehrstedt, Tonnies and Eisentraut, 2004).

* Corresponding author. Tel.: +4-0722-627-601; fax: +40-021-315-29-34.
E-mail address: dumitrache.adina@gmail.com
Furthermore, the anxious patients may more often utilize extractions instead of restorations, due to avoiding dental care until the need for acute treatment arises and extraction may be the only treatment option. Also, anxious patients often have negative thoughts and expectations about dental treatments and oral care and their own ability to cope.

Notwithstanding, advances in dental treatment methods and technology and increased knowledge, have not made any impact on the reduction of dental anxiety over the past few decades as shown by various studies conducted in several countries across a wide range of cultures. In the literature, some authors found that 4–20% of adults report high dental anxiety and that 2–3% show phobic avoidance or report irregular dental care (Bernson et al, 2007).

Once dental anxiety established, a specific strategy for approaching the patients is recommended (Bray et al, 2009). The first step is to identify dental anxious patients (during an initial conversation in a neutral room without stimuli like sounds, smells and dental equipment) and afterwards to assess the level of the dental anxiety. The results from the interview and MDAS and DFS questionnaires, provide sufficient knowledge about the patient’s degree of dental anxiety, and guide the future treatment plan. Dental anxiety can be part of a complex condition, needing specialist attention; therefore the optimal interdisciplinary treatment consists of a close cooperation between the dentist and a psychologist (Berggren, 2001). Of the methods for reducing the anxiety level, we focused on cognitive therapy that targets to help the patients to manage receiving dental care through learning coping strategies to deal with negative feelings and cognitions. In order to reduce the dental anxiety, the aim of the cognitive method is to restructure the content of negative thoughts and to increase the patient’s control over his own cognitions and emotions. It is very important and strongly recommended to tell the patient what to expect, what measures are taken to make the dental treatment as comfortable as possible and, also, to ensure the safety and control regarding oral care (Hoem, Tvermyr and Elde, 2012). This kind of specific information and explanations gives the patients a more realistic view of the feared situation and enhance their comfort and safety of dental care.

2. Research Methodology

The purpose of the study was to determine the effectiveness of cognitive techniques in reducing dental anxiety.

2.1. The research hypotheses

The research hypotheses of the study were as follows: the general hypothesis, which we propose to demonstrate, is that applying cognitive restructuring in a sample of phobic dental patients will determine a significant decrease of the general anxiety level; the specific hypotheses are as follows: it can be assumed that the effect of a method for reducing anxiety is a decrease of avoidance-anticipation anxiety, of physiological anxiety during the treatment and of the level of anxiety to stimuli and situations specific to dental treatment.

2.2. Participants

Participants in this study were 47 patients of a private dental clinic in Bucharest, of whom 40 meet the criteria for inclusion into the research project (scores resulted from the assessment of anxiety level were above average values, MDAS≥13). Patients are 22-54 years old (median age 37.53 years and a standard deviation of 8.15) and gender distribution is 55% men and 45% women. Ethical Considerations: by filling in the questionnaires, subjects agreed to participate in the study and participants’ confidentiality in relation with results of the questionnaires has been guaranteed.

2.3. Instruments and Research Methods

The following research methods have been used: theoretical (assessment of dental anxiety level with two questionnaires specific to dental medicine), investigational (intervention experiment – cognitive restructuring method for reducing anxiety to treatment) and statistical methods (SPSS software version 13.0): descriptive analysis and t-student analysis (Independent One Samples T test).
2.3.1. Analysis instruments.

The respondents were instructed to fill the answers for two psychometric questionnaires used to evaluate dental anxious reactions: Modified Dental Anxiety Scale questionnaire (MDAS, developed by Humphris and Hull, 2007) and Dental Fear Survey (Kleinknecht et al., 1973). MDAS can be used in screening of all new patients over the age of 12, and gives an impression of the degree of anxiety. It contains five questions which the patient is supposed to grade on a score from 1-5. MDAS assesses dental anxiety as varying from 5 (no fear) to 25 (extreme fear), with a score of 19 or above indicating a medium or high level of anxiety. MDAS assesses five anxiety-generating situations: one day prior to treatment, in the waiting room, on dentist’s chair, anticipating tooth depuration (scaling), on dentist’s chair, anticipating dental filling and on dentist’s chair, anticipating an injected local anaesthesia. DFS can be used when the patient already has been identified as anxious (with MDAS). This test demonstrates the patient’s avoidance behaviour, the physiological reactions and the specific triggers to fear during dental treatment. Containing twenty questions rated with a score from 1-5, the sum score varies from 20-100, with a score of 60 or more indicating a high level of anxiety; DFS questionnaire has been validated in Romania with α Cronbach=0.95 (Mărginean and Filimon, 2011); MDAS has been validated in Romania with α Cronbach=0.90 (Mărginean and Filimon, 2012). The global index results from adding up values of the 20 items or of the 3 subscales. Values of 48-75 show average scores, while values above 76 show high scores. Prof. Kleinknecht gave us the permission to use this instrument for didactic and research purposes.

2.3.2. Techniques Used in the Experiment for Reducing Anxiety:

Four sessions of cognitive restructuring technique have been used in order to reduce the anxiety level, applied on a randomly selected group consisting of 20 patients, developed by the same researcher (the control group consisted of 20 patients as well)

The therapy progressed as follows: based on the information gained in the intake interview, the initial discussion with the patient carefully assessed his/her thoughts, beliefs, attitudes, and opinions in relation to dentistry and to his/her own dental care behaviour. It was made clear to the patient that faulty cognitions originate from previous learning, and possible sources of these cognitions were identified and discussed.

The treatment was described to the patient as an exploration of the sources of fearfulness cognitive restructuring (modification of negative cognitions), provision of information (about oral health and dental treatment) and as a way of finding better ways to handle the feared situations. No relaxation training was used.

3. Results. Discussion

The research design was pretest-retest type and anxiety levels have been recorded both before and after interventions using DFS questionnaire, with both global components and subcomponents: physiological, anticipation-avoidance and to anxiogenic stimuli.

For the interventional group, the global DFS score before therapy is 72,95 (DS±4.006) and after intervention is 57,90 (DS±3.972) (Table 1)

For the control group, the global DFS score before therapy is 65.60 (DS±8.325) and after intervention is 65.40 (DS±8.325) (Table 1).

<table>
<thead>
<tr>
<th>DFS score</th>
<th>Cognitive technique</th>
<th>Control group</th>
<th>Group</th>
<th>T Independent Test</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  Median  DS</td>
<td>N  Median  DS</td>
<td>Group</td>
<td></td>
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<tr>
<td>Global score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before intervention</td>
<td>20 72,95  4,006</td>
<td>20 65.60  8.325</td>
<td>Interventional Group</td>
<td>25.627</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>After intervention</td>
<td>20 57,90  3,972</td>
<td>20 65.40  8.325</td>
<td>Control Group</td>
<td>1.710</td>
<td>0.104</td>
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</tr>
</tbody>
</table>
Results of One Sample T test on differences between median anxiety values, as measured by global DFS score, between baseline and final assessment, for the interventional group, show a statistically significant difference ($t=25.637$, $p=0.000<0.05$, for a confidence interval of 95%) (Table 2).

Table 2. T test indicators for DFS components for the interventional group (pretest and retest)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance anxiety pretest-retest</td>
<td>1.050</td>
<td>.510</td>
<td>.114</td>
<td>1.000</td>
<td>19</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Physiological anxiety pretest-retest</td>
<td>5.000</td>
<td>1.556</td>
<td>.348</td>
<td>4.272</td>
<td>5.728</td>
<td>19</td>
<td>.000</td>
</tr>
<tr>
<td>Stimuli anxiety pretest-retest</td>
<td>9.600</td>
<td>3.393</td>
<td>.366</td>
<td>8.012</td>
<td>11.188</td>
<td>19</td>
<td>.000</td>
</tr>
<tr>
<td>Global score DFS pretest-retest</td>
<td>15.050</td>
<td>2.625</td>
<td>.587</td>
<td>13.821</td>
<td>16.279</td>
<td>25.637</td>
<td>19</td>
</tr>
</tbody>
</table>

For the control group, the differences of DFS are not statistically significant ($p=0.330>0.05$ for a confidence interval of 95%) (Table 3).

Table 3. T test indicators for DFS components for the control group (pre-test and retest)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidance anxiety pretest-retest</td>
<td>.050</td>
<td>.224</td>
<td>.050</td>
<td>-.055</td>
<td>.155</td>
<td>1.000</td>
<td>19</td>
</tr>
<tr>
<td>Physiological anxiety pretest-retest</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stimuli anxiety pretest-retest</td>
<td>.150</td>
<td>.366</td>
<td>.082</td>
<td>-.021</td>
<td>.321</td>
<td>1.831</td>
<td>19</td>
</tr>
<tr>
<td>Global score DFS pretest-retest</td>
<td>.200</td>
<td>.523</td>
<td>.117</td>
<td>-.045</td>
<td>.445</td>
<td>1.710</td>
<td>19</td>
</tr>
</tbody>
</table>

Therefore, the general research hypothesis is confirmed. For the interventional group, the differences on the avoidance-anticipation component show a statistically significant difference ($t=9.200$, $p=0.000<0.05$ for a confidence interval of 95%), also for the physiological component ($t=14.371 p=0.000<0.05$ for a confidence interval of 95%) and for specific dental stimuli ($t=12.651$, $p=0.000<0.05$ for a confidence interval of 95%) (Table 2).

The specific hypotheses research, according to which the use of cognitive restructuring for reducing dental anxiety will determine a reduction in the anxiety level per subcomponents, is confirmed as follows: it can be assumed that the effect of the method for reducing anxiety is a decrease of the avoidance-anticipation anxiety, of physiological anxiety during the treatment and of the level of anxiety to stimuli and situations specific to dental treatment.

For the control group, the differences of DFS are not statistically significant ($p=0.330>0.05$ for a confidence interval of 95%) (Table 3).
4. Conclusions

This study is analyzing the result of the efficacy of four sessions of cognitive restructuring technique in order to reduce the anxiety level. It is concluded that it is possible to obtain substantial reductions of dental trait anxiety through sessions of cognitive restructuring. The cognitive techniques for reducing dental anxiety have had a statistically significant effect in decreasing it, both for the general index (total DFS) and for the three components: avoidance, physiological and to stimuli, comparative to the control group, where differences of DFS are not statistically significant. This method should be included in a comprehensive approach for reducing dental fear.

References


