Patient Education and Counseling 98 (2015) 1112–1115

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Intervention

A controlled trial on the effect of hypnosis on dental anxiety in tooth removal patients

Heide Glaesmer[a,*], Hendrik Geupel[b], Rainer Haak[c]

[a] Department of Medical Psychology and Medical Sociology, University of Leipzig, Germany
[b] Private dental practice, Gera, Germany
[c] Department of Cariology, Endodontology and Periodontology, University of Leipzig, Germany

ARTICLE INFO

Article history:
Received 15 October 2014
Received in revised form 27 January 2015
Accepted 12 May 2015

Keywords:
Dental anxiety
Dental fear
Hypnosis
Controlled trail

ABSTRACT

Objective: Empirical evidence concerning the efficacy of hypnosis to reduce anxiety in dental patients is limited. Hence we conducted a controlled trial in patients undergoing tooth removal. The study aims at assessing patient's attitude toward hypnosis and comparing the course of dental anxiety before, during and subsequent to tooth removal in patients with treatment as usual (TAU) and patients with treatment as usual and hypnosis (TAU + HYP).
Methods: 102 patients in a dental practice were assigned to TAU or TAU + HYP. Dental anxiety was assessed before, during and after treatment. All patients were asked about their experiences and attitudes toward hypnosis.
Results: More than 90% of patients had positive attitudes toward hypnosis. Dental anxiety was highest before treatment, and was decreasing across the three assessment points in both groups. The TAU + HYP group reported significantly lower levels of anxiety during treatment, but not after treatment compared with TAU group.
Conclusion: Our findings confirm that hypnosis is beneficial as an adjunct intervention to reduce anxiety in patients undergoing tooth removal, particularly with regard to its no-invasive nature.
Practical implication: The findings underline that hypnosis is not only beneficial, but also highly accepted by the patients. Implementation of hypnosis in routine dental care should be forwarded.

1. Introduction

Dental anxiety as an uncomfortable agitation prior, during and subsequent to dental treatment procedures is a prevalent condition that results in substantial distress, avoidance or postponement of dental treatments and possible impairments of oral health [1–3]. Pre-operative anxiety increases hours or days before the surgery [4] and is associated with higher postoperative pain [5,6]. Dental anxiety is associated with neurophysiologic alterations in heart rate, respiratory rate, blood pressure prior, during and subsequent to dental treatments [7] and with the expectation of pain during and after treatment as well as sleep disturbances before treatment, and cardiac palpitations and transpiration right before and during treatment [8]. Patients suffering from dental anxiety require specific attention.

Dental anxiety ranges from light unease to severe levels of anxiety and dental phobia, which can be classified as a specific phobia (F40.2) in ICD-10. While only a few patients suffer from severe dental phobia, different levels of dental anxiety are quite common [9]. Patients scheduled for tooth removal in a dental practice showed a mean level of dental anxiety of 5.2 on the visual analog scale ranging from 1 to 10. 18.7% of patients were in the third quartile, and another 24.5% were in the fourth quartile of dental anxiety. Former painful experiences in dental care are the most common reason for current dental anxiety reported by the patients [8].

Early research in dental anxiety focused on communicational skill of the dentists and provision of sufficient information about the procedures of control (e.g., "Tell-show-do") [9]. Both pharmacological and psychological approaches overcoming dental phobia are widely reported in the literature [9,10]. Psychological interventions specifically addressing dental anxiety and dental phobia include behaviorally oriented approaches (e.g., applied relaxation, biofeedback, behavioral therapy, hypnosis), cognitively oriented approaches (cognitive behavioral therapy) and educational interventions [11]. Overall these interventions are expected

* Corresponding author at: University of Leipzig Department of Medical Psychology and Medical Sociology, Philipp-Rosenthal-Str. 55, 04103 Leipzig, Germany. Tel.: +49 341 9718811; fax: +49 341 9718809.
E-mail address: Heide.Glaesmer@medizin.uni-leipzig.de (H. Glaesmer).

http://dx.doi.org/10.1016/j.pec.2015.05.007
0738-3991/

to successfully reduce dental anxiety [11–14]. Studies with proper methodology, e.g., (randomized) controlled trails with a proper sample size are rare [12,15], and a systematic review of current evidence in adults is lacking to date [10]. Severely burdened patients with dental phobia require more complex psychotherapeutic interventions like cognitive-behavioral techniques. There are few studies investigating positive effects of cognitive-behavioral interventions for dental phobia showing improved utilization rates of dental care and reduced dental anxiety after treatment [14,16–18]. In these patients cognitive-behavioral interventions are supposed to be more effective than hypnosis or other psychological interventions [12,16–18].

Nevertheless, most of the patients in dental practice are suffering from mild to moderate dental anxiety. It seems worthwhile to use adjunct interventions to address dental anxiety while routinely treating these patients. Hypnosis is a non-invasive intervention to stimulate relaxation during treatment. It can be used as a stand-alone intervention or as an adjunct to treatment as usual (e.g., anesthesia). The number of studies investigating hypnosis as an adjunct intervention is very limited, but preliminary evidence suggests that hypnosis reduces dental anxiety in patients undergoing dental treatments [7,13,19–21]. It is possible to induce hypnosis live or by standardised suggestions (e.g. CD). The use of a CD with an recorded hypnosis suggestion track is an economical and easy to implement opportunity. It could be easily disseminated to a large number of dental practices. Compared to this live hypnosis requires more attention of the dentist, which could be difficult especially in demanding treatment situations.

Dental anxiety is a common problem in dental care. Hypnosis seems to be a promising technique in dental patients, as it seems to reduce anxiety in these patients on the one hand and is easy to apply in everyday dental care on the other hand. The present study is a naturalistic study that aims at (1) assessing patient's attitude toward adjunct hypnosis prior to a planned tooth removal, (2) to compare the course of dental anxiety before, during and subsequent to tooth removal in patients with treatment as usual (TAU) and patients with treatment as usual and hypnosis (TAU ± HYP). We expected that an additional hypnosis will reduce dental anxiety during treatment, and (3) to assess the evaluation of adjunct hypnosis after treatment in the patients with treatment as usual and hypnosis (TAU ± HYP).

2. Methods

2.1. Study population and study procedure

Between May and November 2010 we assigned all patients of a private dental practice (practice of Hendrik Geupel, Gera, Germany) consulting for tooth removal to receive treatment as usual (TAU) or treatment as usual combined with hypnosis (TAU ± HYP) with an a priory defined algorithm (every second patient was assigned to the intervention group—TAU ± HYP). TAU was tooth extraction with tooth forceps and luxator. All tooth extraction patients received local anesthesia (articain with adrenalin 1/200.000). Patients were included in the study if they were at least 18 years old and a written informed consent was given. We included a total number of 107 patients. 5 patients were excluded from the analyses because of the necessity of surgical access and osteotomy. The remaining sample consists of 102 patients (51 patients in each group). Patients were randomly assigned to the 2 study groups, resulting in 51 patients per group. There are no differences between both groups with respect to age, gender, health insurance status, annual visits to the dentist, approximal plaque index and pulse before tooth extraction (Table 1). The study protocol was approved by the ethics committee of the medical faculty of the University of Leipzig in May 2010.

After entering the dental practice, patients undergoing tooth removal were informed about the study, gave their informed consent and filled out a structured questionnaire in the waiting area. The control group received treatment as usual (TAU). Every second patient was assigned (sequential a-priori assignment) to the intervention group that received TAU combined with hypnosis (TAU + HYP). Patients of the intervention group were informed about the hypnosis intervention and gave their informed consent in the dental chair. A portable CD-player including headphones was used to apply the standardized hypnotic suggestions from CD prior and during treatment. A commercially produced CD [22] was used to induce hypnosis. The CD started with an instruction to relax, to close the eyes and to direct attention to a positive and pleasant experience in the past with all five senses, followed by several other instructions like a reinterpretation of unpleasant noise of treatment, dissociation, suggestive instructions concerning pain and blood supply in the intervention area. After tooth extraction patients are dehypnotized. The study dentist is trained in dental hypnosis. After tooth extraction, patients of both groups were asked by the treating dentist to rate their level of anxiety during (retrospectively) and subsequently after treatment. The patients of the intervention group (TAU + HYP) were asked about the subjective effects of the hypnosis on dental anxiety.

2.1.1. Measures

Visual analog scale (VAS): To assess the level of dental anxiety before, during and after treatment, patients were asked to rate their dental anxiety on a VAS ranging from 1 ("no anxiety") to 10 ("very intensive anxiety").

Table 1
Basic characteristics of both groups.

	TAU group $n = 51$	TAU + HYP group $n = 51$	Test
Age (years) (M/SD)	48.4 (18.4)	46.1 (14.9)	$\chi^2 = .994$, $p = .319$
Gender			
Females (%/n)	45.6% (26)	54.4% (31)	$T = .693$, $p = .490$
Insurance status (%/n)[a]			
Private insurance	7.8% (4)	5.9% (3)	$\chi^2 = .153$, $p = .695$
Statutory insurance	92.2% (47)	94.1% (48)	
Annual visit to the dentist in the last 5 years[b] (%/n)	80.4% (41)	74.5% (38)	$\chi^2 = .505$, $p = .477$
Approximal plaque index[c] (M/SD)	30.2 (29.7)	27.8 (24.2)	$T = .464$, $p = .644$

[a] In Germany a general compulsory health insurance is established. More than 90% of the adult German population are member of statutory health insurance system. The other less than 10% are privately insured.
[b] "Have you been to the dentist at least once a year in the preceding five years (yes/no)?"
[c] Approximal plaque index (API) as measure of oral hygiene status ranges between 0 and 100%: <25% optimal; 25–39% good to moderate; 40–70% moderate to worthy of improvement; 70–100% insufficient oral hygiene status.