# Strah od odlaska stomatologu

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# */ Fear of Going to the Dentist*

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Strah od odlaska stomatologu može imati posljedice povezane s oralnim zdravljem, ali i sa zdravljem općenito. Zbog tog straha može izostati odgovarajuća i redovita stomatološka skrb (barem jednom godišnje). Dentalna anksioznost/fobija jedan je od vodećih čimbenika zbog kojeg pacijenti izbjegavaju odlazak stomatologu. Cilj ovog rada bio je ispitati je li osobe koje imaju loše iskustvo povezano s odlaskom stomatologu u ranoj dobi, tj. tijekom djetinjstva češće razviju dentalnu anksioznost/fobiju te je li je dentalna anksioznost/fobija povezana s povećanom osjetljivosti za dentalnu bol. Također, cilj je ispitati postižu li osobe koje imaju dentalnu anksioznost/fobiju više rezultate na ljestvici anksioznosti kao stanja (*Spielberger's State-Trait Anxiety Inventory* STAI-X-1) u odnosu na one bez dentalne anksioznosti/fobije. Rezultati ovog istraživanja potvrđuju hipotezu da osobe s lošim iskustvom povezanim s odlaskom stomatologu tijekom djetinjstva imaju višu razinu dentalne anksioznosti, višu trenutnu anksioznost odnosno anksioznost kao stanje na STAI-X-1 te veću dentalnu bol u odnosu na ispitanike koji svoje iskustvo povezano s odlaskom stomatologu tijekom djetinjstva ne percipiraju kao loše. Također, ispitanici s dentalnom anksioznošću/fobijom rjeđe posjećuju stomatologa.

*/ Fear of a dental procedure can have consequences related to oral health, but also to health in general. This fear can result in a lack of adequate and regular dental care (at least once a year). Dental anxiety/phobia is one of the leading factors for why patients avoid going to the dentist. The aim of this study was to identify if people who had an unpleasant experience with a dentist in childhood are more likely to develop dental anxiety/phobia and to establish whether or not dental phobia is related to a greater sensitivity for dental pain. This study investigates if people with dental anxiety achieve higher results on the scale of anxiety state (STAI-X-1) than people who do not have dental anxiety/phobia. The results of this research confirm the hypothesis that people with an unpleasant experience with a dentist in childhood have a higher level of dental anxiety and higher anxiety state (STAI-X-1) and experience higher levels of dental pain than people who do not perceive their experience with a dentist during childhood as unpleasant or bad. Additionally, subjects with dental anxiety/phobia were less likely to visit the dentist.*

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## UVOD

Anksioznost je očekivan odgovor na određeni tip stresora. Radi se o emociji koja se može manifestirati nizom psihičkih i somatskih simptoma. Izvor anksioznosti mogu biti prethodno doživljena traumatska iskustva, ali i anticipirana iskustva kada su izvor anksioznosti budući događaji. Pri tome se postavlja pitanje: „Što će biti, što će se dogoditi?“. Takav događaj može biti intervju za posao, prvi dan škole, prvi posjet ginekologu ili stomatologu. Dentalna anksioznost je vrlo česta pojava, osobito kod pacijenata koji se spremaju na stomatološki zahvat s kojim se nisu prije susretali. Strah od stomatoloških pregleda ili intervencija posljedica je osobnih iskustava ranije doživljene boli, ali vrlo često i nedoživljene, već samo očekivane boli (1). Tako odlazak stomatologu u većine pacijenata izaziva neugodan osjećaj, a situaciju u stomatološkoj ordinaciji doživljavaju kao neku vrstu opasnosti. U većini slučajeva anksioznost će prestati kada osoba prestane biti u blizini stresora. Tako je, u ovom slučaju, način ublažavanja tjeskobe zapravo izbjegavanje izvora opasnosti, tj. odlaska stomatologu. Fobija je pretjerana i iracionalna reakcija straha. Karakterizirana je dubokim osjećajem straha ili paničnim napadom pri susretu s izvorom straha. Strah može biti izazvan određenim mjestom, situacijom ili predmetom. Za razliku od općih anksioznih poremećaja, fobija je obično povezana sa specifičnim izvorom opasnosti. Fobi-

## INTRODUCTION

Anxiety is the expected response to a certain type of stressor. It is an emotion which can manifest in a number of psychic and somatic symptoms. The source of the anxiety can be previous traumatic experience, but it can also be an anticipated experience, which is expressed in the question: “What is going to happen?” Such an event can be, for example, a job interview, the first day of school, the first visit to a gynecologist or a dentist. Dental anxiety is a very common and dominant event, especially with patients who are preparing for a dental procedure with which they have no previous experience. The fear of dental checkups or interventions is a consequence of a personal experience of pain which happened in the past or, very commonly, is only anticipated (1). Thus, having a dentist appointment creates a feeling of uneasiness in most patients, and the situation in the dental clinic is perceived as dangerous. In most cases, the anxiety will cease when the patient leaves the vicinity of the stressor. In this case, avoiding the source of the danger, visiting the dentist, is the chosen way of calming the anxiety. A phobia is an excessive and irrational reaction of fear characterized by a deep feeling of fear or a panic attack when faced with the source of the fear. The feeling of fear can be triggered by a certain place, situation or item. Unlike other anxiety disorders, phobia is usually linked to a specific source of

ja povezana s odlaskom stomatologu zove se odontofobija ili dentalni strah. Smatra se da za tu fobiju kod nekih pacijenata postoji genetska predispozicija (2). Ta je fobija popraćena nizom simptoma među kojima su: ubrzan rad srca (tahikardija), povišen krvni tlak, ubrzano disanje, suha usta, drhtanje. Dentalna fobija je najizraženji oblik straha s kojim se suočavaju stomatološki pacijenti. Strah može biti povezan s više specifičnih situacija kao primjerice strah vezan uz specifični dio pregleda, strah od boli, strah od anestezije, strah od dijagnoze. Nesumnjivo je da pojava takvog straha može biti rezultat traumatičnog iskustva od ranije, a takav strah može kasnije utjecati na neredovite posjete stomatologu, izostanak odgovarajuće i redovite stomatološke skrbi. Posljedica navedenog može biti pogoršanje oralnog zdravlja. Pacijenti koji već imaju dentalni strah izbjegavaju posjete stomatologu (3-5). Nemali broj odraslih ima određenu razinu dentalne anksioznosti, od blage do teške. Utvrđeno je da oko 3-16 % odraslih pati od dentalne fobije (6-8). Appukuttan i sur. (9) ustanovili su da 3 % populacije u Indiji pati od dentalne fobije, dok je Halonen (10) kod 11,3 % ispitanika u općoj populaciji u Finskoj našao da zadovoljavaju kriterije za dentalnu fobiju, a Humphris (11) u Velikoj Britaniji kod 11,6 % takvih ispitanika.

Odnos između pacijenta, stomatologa i medicinskog osoblja koje je u kontaktu s pacijentom, osobito onim koji ima dentalnu anksioznost i dentalnu fobiju, od velikog je značenja. Odnos može pogoršati ili poboljšati trenutnu situaciju i direktno utjecati na ponašanje pacijenta u budućnosti (12). Cilj komunikacije je pomoći pacijentu da se opusti i tako steći njegovo povjerenje. Tijekom razgovora treba pacijentu protumačiti postupak zahvata i pružiti mu bezrezervnu podršku. Kreativne tehnike od strane stomatologa mogu uključivati i tehnike disanja, progresivnu relaksaciju mišića, tehnike vođenih fantazija. Prema tome, pacijenti koji imaju dentalnu anksioznost značajan su izazov za stoma-

danger. Phobia linked to visiting the dentist is called odontophobia or dental phobia. It is believed that there exists a genetic predisposition to it in some patients (2). Some of its symptoms are: heightened heart rate (tachycardia), heightened blood pressure, rapid breathing, dry mouth, tremors or shivering. Dental phobia is the most prominent form of fear dental patients face. The fear can be linked to a number of specific situations, such as fear linked to a specific part of the checkup, fear of pain, fear of anesthesia or fear of diagnosis. There is no doubt that the emergence of such fear can be the result of a previous traumatic experience, which can cause irregular visits to the dentist and a lack of regular dental care. The consequence can be the worsening of dental health. The patients who already have a dental phobia avoid visiting the dentist (3-5). A large number of adults has a certain level of dental phobia ranging from mild to severe. It has been ascertained that around 3-16% of adults suffer from dental phobia (6-8). Appukuttan et al. (9) have found that around 3% of the population of India suffers from dental phobia. Halonen (10) found that 11.3% of subjects in Finland fit the criteria for dental phobia, while Humphris (11) observed the same for 11.6% of subjects in the UK.

The relationship between the patient, the dentist and the medical staff in contact with the patient, especially those with dental phobia, is of great significance. They can improve or worsen the situation and directly influence the patient's future behavior (12). The goal of communication with the patient is to help them relax and acquire their trust. During the conversation, the staff should explain the procedure and offer encouragement and support to the patient. Creative techniques can include breathing techniques, progressive muscle relaxation and guided fantasy. Patients with dental phobia pose a challenge to the dental team. It is important to be mindful of and be able to

tološki tim. Važno je imati na umu i prepoznati dentalnu anksioznost i sukladno s time djelovati i izabrati način primjene određenih tehnika, osobito kada su u pitanju pedijatrijski pacijenti. U tom bi slučaju trebalo dodatno zaslužiti njihovo povjerenje, preko kreativnih igara koristeći dječje igračke i male poklone u znak zahvale za njihovo strpljenje i suradljivost tijekom pregleda (13-15). Kod roditelja koji dolaze u pratnji s djecom s dentalnom anksioznošću, može se, također, kao kod pasivnih promatrača, javiti neka vrsta stresa (16). Dentalni strah kod djece povezuje se s povišenom anksioznošću kod roditelja, osobito majke, no, povezan je i s višom prevalencijom dentalne anksioznosti u obitelji (17). Dentalna anksioznost češće se javlja kod djece između 6 i 12 godina, što je direktno povezano s promjenama na zubima koji su, također, u razvoju (18). S obzirom da su dentalna anksioznost i strah multifaktorski i utječu na više subjekata: na pacijenta, stomatologa i roditelje, trebalo bi primjenjivati više tehnika, osim farmakoloških, kako bismo pomogli barem kod manje invazivnih zahvata i tako olakšali dentalni pregled. Slušanje glazbe tijekom intervencije ima umirujući učinak i smanjuje dentalnu anksioznost (19). Korištenje uređaja virtualne stvarnosti kao tehnike, koja je jednostavna za izvođenje, kod djece može otkloniti pozornost sa samog pregleda i time umanjiti bol i anksioznost (20,21). Ipak, upoznavanje sa stomatologom još od najranijeg djetinjstva te njegove dobre komunikacijske vještine i empatija, neovisno o njegovu radnom iskustvu, mogu direktno utjecati na stupanj dentalne anksioznosti, a posredno i na oralno zdravlje pacijenta (22).

# METODE

## Hipoteza

Osobe koje imaju ranije loše iskustvo (tijekom djetinjstva) povezano s odlaskom stomatologu češće razviju dentalnu anksioznost/fobiju, teže podnose dentalnu bol i više su tjeskobne u situ-

recognize the presence of dental phobia and act accordingly, which also includes choosing to apply the right techniques, especially with pediatric patients. In case of pediatric patients, their trust especially must be earned using creative games as well as using toys and small gifts as a sign of appreciation for their patience and cooperativeness during the checkup (13-15). Parents who escort the children with dental phobia, as well as other passive observers, can also show signs of some kind of stress (16). Dental phobia in children is linked to heightened anxiety in parents, especially mothers, but it is also linked to higher prevalence of dental anxiety within the family (17). Dental anxiety is more common in children aged between 6 and 12, which is directly linked to the changes in developing teeth (18). Dental phobia has many factors and affect a number of subjects: the patient, the dentist and the parents. Several techniques should be employed, including some that are not purely pharmacological, in order to help with less invasive procedures and to make dental checkups easier. Listening to music during the procedure has a calming effect and reduces dental phobia (19). Using VR (virtual reality) devices is a technique which is easy to apply and can divert attention from the checkup and thus reduce the pain and anxiety (20, 21). Still, a person's first encounter with a dentist in the earliest childhood and that dentist's communication skills and level of empathy, regardless of their work experience, can directly impact the degree of dental phobia and indirectly impact the oral health of the patient (22).

# METHODS

## Hypothesis

Subjects who have an unpleasant previous experience (that happened during childhood) with a dentist develop social phobia more often, are more susceptible to dental pain and are more anxious during a dental procedure in

aciji stomatološkog postupka u odnosu na osobe koje nisu imale ranije loše iskustvo vezano za odlazak stomatologu.

## Ciljevi

Cilj ovoga rada bio je ispitati imaju li ispitanici s ranijim lošim iskustvom povezanim s odlaskom stomatologu jače izraženu dentalnu anksioznost/fobiju u odnosu na one bez takvog iskustva. Zatim, ispitati stupanj anksioznosti kao stanja kod ispitanika koji imaju ranije loše iskustvo povezano s odlaskom stomatologu u odnosu na one bez takvog iskustva te ispitati razinu podnošenja opće i dentalne boli kod ispitanika koje imaju dentalnu anksioznost/fobiju u odnosu na one bez dentalne anksioznosti/fobije. Na kraju, cilj je ispitati i razlike u učestalosti posjeta stomatologu između skupine ispitanika s dentalnom anksioznošću/fobijom u odnosu na one bez dentalne anksioznosti/fobije.

## Ispitanici

Ispitivanjem je bilo obuhvaćeno ukupno 70 ispitanika koji su zatražili pomoć stomatologa zbog redovitog kontrolnog pregleda, terapije ili simptoma nastalih zbog patoloških stanja u orofacijalnom području. Ispitanici su bili podvrgnuti različitim stomatološkim zahvatima kao čišćenje kamenca, sanacija karioznog zuba, vađenje zubne pulpe, vađenje zuba i sl. Ispitanici su bili oba spola (35 muškaraca i 35 žena), dobi od 20 do 60 godina, prosječne dobi 39,46 godina. U istraživanje nisu uključene osobe koje nisu bile voljne sudjelovati ili nisu bile u stanju dati vjerodostojne podatke, npr. zbog jake akutne boli ili osobe s mentalnom insuficijencijom.

Tijekom godine koliko je trajalo istraživanje u stomatološku ordinaciju, u kojoj je provedeno istraživanje, javilo se 559 pacijenata. Od ukupnog broja pacijenata nisu uključeni mlađi od 18 godina, odnosno stariji od 60 godina kako bi se izbjeglo simptome povišene anksioznosti koji mogu biti generirani specifičnim razcomparison with the subjects who did not have such an experience.

## Study aim

The aim of this study was to investigate if the subjects with an unpleasant previous experience with the dentist have more prominent dental anxiety/phobia in comparison with those without such an experience. Following that, the aim was to investigate the degree of anxiety in the subjects who had the unpleasant experience in comparison with those without it, and to investigate the capability to withstand oral pain compared between the subjects with and without dental anxiety/phobia. Finally, the goal was to investigate the difference in the frequency of visiting the dentist between the group of subjects with dental anxiety/phobia and the group of subjects without it.

## Subjects

In total, 70 subjects who sought the help of a dentist about a regular dental checkup, therapy or symptoms that manifested due to pathological conditions in the orofacial area participated in the study. The subjects underwent different dental procedures such as calculus removal, taking care of a decayed tooth, pulp removal, tooth extraction, etc. The subjects were equally divided among both sexes (35 men, 35 women), aged from 20 to 60, with an average age of 39.46 years. Persons who were unwilling to participate or were not in condition to provide us with trustworthy data due to, for example, intense pain or persons with mental insufficiency, were excluded from the study.

Over a time of one year, which was the duration of the study, a total of 559 patients presented to the clinic where the research was taking place. Persons younger than 18 and older than 60 were not included in the study, in order to avoid symptoms of heightened anxiety which

dobljem života kao što je adolescencija odnosno specifični stresori u osoba starije dobi kao umirovljenje, separacija zbog odlaska djece, pad kognitivnih kapaciteta i sl. Od preostalog broja ispitanika 70 ih je pristalo sudjelovati u istraživanju. Oni su dobili verbalno objašnjenje o svrsi istraživanja nakon čega su potpisali informirani pristanak. Nakon toga su popunili samoprocjenske upitnike u posebnoj sobi, prije ulaska u ordinaciju. Ispitanici su podijeljeni u dvije podskupine: N1 = 44 ispitanika koji imaju ranije loše iskustvo vezano za odlazak stomatologu i N2 = 26 ispitanika koji nemaju ranije loše iskustvo vezano za odlazak stomatologu.

## Instrumenti

Primijenjeni su sljedeći instrumenti: Opći upitnik, *Spielberger's State-Trait Anxiety Inventory* (STAI-X-1) - Upitnik anksioznosti kao stanja, Upitnik dentalne anksioznosti (DAS) te Upitnik procjene boli.

Općim upitnikom dobili smo sociodemografske podatke - spol, dob, zanimanje, bračni status, radni status, stručna sprema te podatke koji se odnose na zdravstveni status.

STAI-X-1 - Upitnik anksioznosti kao stanja sadrži 20 tvrdnji uz pomoć kojih se procjenjuje kako se ispitanik osjeća u trenutku ispitivanja. Ispitanici su imali zadatak uz svaku tvrdnju zaokružiti jedan odgovor na ljestvici Likertovog tipa od 4 stupnja (1 = uopće ne do 4 = jako) koji najbolje opisuje njihovo trenutno stanje. Ispunjavanje upitnika nije vremenski ograničeno. Ukupan rezultat se dobiva tako da se zbroje bodovi za svih 20 tvrdnji. Najmanji mogući rezultat je 20, a najveći 80. Veći rezultat ukazuje na viši stupanj anksioznosti. Ljestvicom anksioznosti kao stanja (STAI-X-1) procjenjuju se bitna obilježja anksioznosti kao stanja: strepnja, napetost, nervoza i zabrinutost u vrijeme ispitivanja. Utvrđeno je da je ljestvica osjetljiv pokazatelj prolazne anksioznosti koju pojedinci doživljavaju u određenoj situaciji (23).

may be generated by a specific period of life such as adolescence or the stressors specific to older age, like retirement, separation from children, lowering of cognitive capacities, etc. From the remaining number of subjects, 70 agreed to participate. They were given a verbal explanation of the purpose of the study and signed an informed consent slip. After that, they filled out self-assessment tests in a separate room before they entered the clinic. The subjects were divided into two groups, N1=44, which comprised subjects with a previous unpleasant experience with dentists, and N2=26, which comprised subjects who did not have such an experience.

## Instruments

The instruments used in this study were the following: general questionnaire, Spielberger's State-Trait Anxiety Inventory (STAI-X-1) – questionnaire on state anxiety, questionnaire on dental anxiety (DAS) and a questionnaire on pain assessment.

A general questionnaire was used for sociodemographic data – sex, age, occupation, marital status, employment status, education and health status data.

The STAI-X-1 – Questionnaire on state anxiety contains 20 statements that is used to assess how the subject feels during the research. For each statement, the subjects had to choose a value on Likert scale (1=not at all, 4= very much so) which described their state at that moment. There was no time limit. The total score is the sum of points for all 20 statements. The minimal score was 20, the maximum score was 80. The greater the score, the greater the level of anxiety. STAI-X-1 is used to assess the important features of anxiety as a state: dread, tension, nervousness and worriedness at the time of doing the questionnaire. It has been shown that the scale is a sensitive indicator of temporary anxiety individuals face in a certain situation (23).

Za ispitivanje dentalne anksioznosti koristili smo Corahovu ljestvicu dentalne anksioznosti, odnosno *Dental Anxiety Scale* (DAS) koja sadrži četiri pitanja. Ukupna vrijednost rezultata kreće se od 4 do 20. Vrijednosti na testu od 4 do 7 smatraju se normalnom anksioznošću. Na blagu anksioznost upućuju vrijednosti od 8 do 11, na umjerenu anksioznost vrijednosti od 12 do 16, dok vrijednosti od 17 do 20 znače da se radi o dentalnoj fobiji. Instrument je jednostavan za primjenu, zahtijeva malo vremena za provedbu, a u usporedbi s mnogo složenijim testovima iste namjene pokazuje visok stupanj korelacije. Ljestvica je vrlo pouzdana i kod djece. Zbog toga je našla primjenu u znanstvenim istraživanjima, ali i u svakodnevnoj kliničkoj praksi (24-27). U ovom radu nismo posebno izdvojili dentalnu anksioznost i dentalnu fobiju već smo sve ispitanike koji su postigli više od 12 bodova na DAS promatrali zajedno, kao jednu skupinu "dentalna anksioznost/fobija".

Procjena boli učinjena je Upitnikom o boli koji je preuzet iz Sestrinske liste prema Procesu zdravstvene njege. Upitnik je samoprocjenski, odnosno ispitanik sam izabire vrijednost (broj) za koju smatra da najbolje odgovara jakosti boli koju doživljava. U upitniku se procjenjuje bol u raznim dijelovima tijela (uho, glava, ramena, leđa, zubobolja i općenito u tijelu) na ljestvici od 1 do 10 pri čemu 1 do 3 označava podnošljivu bol, 4 do 6 jaku bol, od 7 do 9 vrlo jaku bol i 10 nepodnošljivu bol. Za potrebe ovog istraživanja analizirani su odgovori na česticama „Označite do koje jačine trpite bol koja se pojavljuje općenito u tijelu" i „Označite do koje jačine trpite bol kod zubobolje kada se pojavi?". Rezultati su prikazani kao prosječne vrijednosti na ljestvici od 1 do 10.

## Postupak

Ispitanici su najprije upoznati sa svrhom ispitivanja. Oni ispitanici koji su prihvatili sudjelovati u istraživanju dobili su na uvid informirani pristanak. Ispitanici su dobili i usmena pojaš-

Corah's scale of dental anxiety, the Dental Anxiety Scale (DAS), was used to probe dental anxiety levels. The scale contains four questions. The total score can range from 4 to 20. Scores 4-7 are considered normal levels, 8-11 indicate mild anxiety, 12-16 indicate moderate anxiety and 17-20 indicate dental phobia. The instrument is easy to use, takes little time to apply and it shows a higher level of correlation in comparison with more complex tests. The scale is very trustworthy when applied to children too, which is why it is used for both scientific experiments and everyday clinical work (24-27). In the present study, we did not separate dental anxiety and dental phobia, but we classified all the subjects who scored over 12 points on the DAS test together as one "dental anxiety/phobia" group.

Pain assessment was performed using a questionnaire from the Nursing assessment list according to the Nursing health process. The questionnaire is a self-assessment in style, meaning the subject chooses the value (numerical) for which they deem fits best the intensity of pain they are experiencing. The questionnaire asks the subjects to assess the pain in different parts of the body (ears, head, shoulders, back, toothache, general bodily pain) on a scale from 1 to 10, where 1 to 3 means a tolerable pain level, 4 to 6 indicates a strong pain level, 7 to 9 indicates a very strong pain level, and 10 means insufferable pain level. For the purpose of this research, the answers to the questions "Mark the pain level you endure when you feel pain in your body in general" and "Mark the pain level you endure when you feel toothache" were analyzed. The results are shown as average values on a scale from 1 to 10.

## The procedure

The subjects were first informed of the purpose of the study. Those who agreed to participate were given the informed consent slip, the terms of which were also explained to them

njenja vezana za informirani pristanak. Cijeli postupak vodio je glavni istraživač, tada zubni asistent u stomatološkoj ordinaciji u kojoj je istraživanje provedeno. Svi podatci prikupljeni su prije ulaska u stomatološku ordinaciju, tj. prije stomatološkog zahvata tako da su svi ispitanici bili u očekivanju zahvata, tj. u anticipaciji ispitivanih osjećaja anksioznosti odnosno boli. Nakon potpisivanja informiranog pristanka zamoljeni su da popune samoprocjenske upitnike, predviđene za ovo istraživanje. Prethodno su dobili usmena objašnjenja za svaki upitnik. Upitnike su popunjavali u zasebnoj prostoriji, prije ulaska u stomatološku ordinaciju. Predviđene upitnike popunjavali su sljedećim redoslijedom: Opći upitnik, STAI X-1 , DAS – upitnik dentalne anksioznosti i Upitnik o boli.

## Statistička obrada podataka

Podatci dobiveni tijekom istraživanja preneseni su na elektronički medij i obrađeni. Tekst je obrađen u programu Word 2007-365, a statistička obrada podataka učinjena je u programu "Statistica". Rezultati su prikazani u tablicama. Od statističkih metoda korišteni su t-test za ispitivanje razlika između skupina te Mann-Whitneyev test i hi-kvadrat test, kada nisu bili zadovoljeni uvjeti za korištenje parametrijskih testova. Statistički značajnom razlikom smatrane su vrijednosti p <0,05.

## REZULTATI

U istraživanju je sudjelovalo 70 ispitanika, od čega 50 % (N=35) žena i 50% (N=35) muškaraca, u dobi 20-60 godina, prosječne dobi 39,46 godina. Oženjemo je bilo 57,4 % (N=39), a 36,8 % (N=25) neoženjeno. Od ukupnog broja 73,5 % (N=50) bilo je u trenutku ispitivanja zaposleno. Što se edukacije tiče 60 % (N=40) imalo je završenu srednju stručnu spremu (SSS), a 15,7 % (N=11) visoku stručnu spremu (VSS) (tablica 1).

orally. The procedure was led by the lead investigator, followed by the dental assistant at the dental office where the research took place. All data were collected before entering the dental office, i.e. before the dental procedure, so that all subjects were expecting the dental procedure, meaning they were in the state of anticipation of the feelings of anxiety and pain that were the topic of the study. Having signed the informed consent, patients were asked to fill out the self-assessment questionnaires prepared for this study. They were also given oral instructions for each questionnaire beforehand. They filled out the questionnaires in a separate room before entering the dental office. Patients filled out the questionnaires in the following order: the general questionnaire, STAI X-1, DAS – dental anxiety survey, and pain questionnaire.

## Statistical analysis

The data obtained during the study were digitally processed. The text was typed in Microsoft Word 2007-365, and the statistical analysis was performed in Statistica. The results are shown in tables. The statistical methods used were: t-test for testing the difference between the groups and Manny-Whitney and Chi-squared test when conditions for use of parametric tests were not met. Statistically significant difference values were those where p<0.05.

## RESULTS

A total of 70 subjects participated in the study, of which 50% (N=35) were men and 50% (N=35) were women, aged from 20-60, with the average age being 39.46 years. Among the subjects, 57.4% (N=39) were married and 36.8% (N=25) were not married, and 73.5% (N=50) were employed at the time of the study. With regard to education levels, 60% (N=40) had a high school diploma and 15.7% (N=11) had a university degree (Table 1).

**TABLICA 1.** Demografska obilježja ispitanika
**TABLE 1.** Demographic characteristics of the subjects

| | N | % |
|---|---|---|
| Dob / Age | | |
| 20-29 | 15 | 21,4% |
| 30-39 | 18 | 30% |
| 40-49 | 23 | 30% |
| 50-60 | 14 | 18,6% |
| Bračni Status / Marital status | | |
| Neoženjen / Single | 25 | 36,8% |
| Oženjen / Married | 39 | 57,4% |
| Rastavljen / Divorced | 4 | 5,9% |
| Udovac / Widowed | 0 | 0 |
| Radni status / Work status | | |
| Zaposlen / Employed | 50 | 73,5% |
| Nezaposlen / Unemployed | 9 | 13,2% |
| Umirovljenik / Retired | 5 | 7,4% |
| Student / Student | 4 | 5,9% |
| Stručna sprema / Education | | |
| KV / Elementary school | 9 | 12,9% |
| SSS / High school diploma | 42 | 60% |
| VKV / Associate degree | 2 | 2,9% |
| VŠS / Bachelor's degree | 4 | 5,7% |
| VSS / Master's degree | 11 | 15,7% |
| Mr. Dr. Spec / Professional degree or higher | 2 | 2,9% |

Na upitnike STAI-X-1 i DAS odgovorilo je svih 70 ispitanika. Raspon odgovora na STAI-X-1 kretao se od 22 do 76 (M=44,06), a na upitniku DAS 4-20 (M=10,76). Na ljestvici opće boli odgovor je dalo 68 ispitanika koji su intenzitet opće boli ocijenili od 1 do 9 (M=5,04), dok je na ljestvici dentalne boli odgovor dalo 69 ispitanika koji su intenzitet dentalne boli ocijenili od 1 do 10 (M=5,54).

Ranije loše iskustvo povezano s odlaskom stomatologu doživjelo je 44 (62,8 %) ispitanika, dok ih je 26 (37,2 %) bez ranijeg lošeg iskustvo povezanog s odlaskom, stomatologu. Nelagodu kada moraju ići stomatologu osjeća 28 (40 %) ispitanika.

Ispitanici koji su doživjeli ranije loše iskustvo povezano s odlaskom stomatologu (M=11,7; SD=4,61) postižu statistički značajno veći rezultat na ljestvici dentalne anksioznosti (t =-2,419, ss= 68, p=0,018) u odnosu na ispitanike bez takvog iskustva (M=9,12, SD=3,9).

Ispitanici koji su doživjeli ranije loše iskustvo povezano s odlaskom stomatologu i imaju umjerenu do jaku dentalnu anksioznost postižu statistički značajno veći skor na ljestvici anksioznosti kao stanja (STAI-X-1) p<0,018 (tablica 2).

STAI-X-1 and DAS questionnaires were answered by all 70 subjects. The range of responses to STAI-X-1 was between 22 and 76 (M=44.06) and 4-20 (M=10.76) to DAS. As for the general pain scale, 68 subjects answered it with values ranging from 1 to 9 (M=5.04), while 69 subjects answered the dental pain scale that assessed their pain levels from 1 to 10 (M=5.54).

A total of 44 subjects (62.8%) had a previous unpleasant experience with the dentist, while 26 subjects (37.2%) did not have such an experience. When asked if they feel uneasiness upon going to the dentist, 28 subjects (40%) answered affirmatively.

The subjects who had a previous unpleasant experience with the dentist (M=11.7; SD=4.61) had statistically significant higher scores on dental anxiety scales (t =-2.419, ss= 68; p=0.018) in comparison with the subjects without such experience (M=9.12, SD=3.9).

The subjects who had a previous unpleasant experience with the dentist and a moderate to strong dental anxiety had statistically significant higher scores on the anxiety as a state scale (STAI-X-1) p<0.018 (Table 2).

**TABLICA 2.** Anksioznost kao stanje, opća i dentalna bol s obzirom na stupanj dentalne anksioznosti u ispitanika s lošim iskustvom povezanim s odlaskom stomatologu
**TABLE 2.** Anxiety (state), general and dental pain in relation to the level of dental anxiety in subjects with an unpleasant experience with a dentist during childhood

| | Razina dentalne anksioznosti / Dental anxiety | | | |
|---|---|---|---|---|
| | Blaga (M ranga)[a] / Mild (M range) | Umjerena do jaka (M ranga)[a] / Moderate to strong (M range) | U[b] | p |
| Anksioznost kao stanje (STAI-X-1) / Anxiety (state) (STAI-X-1) | 18,31 | 27,52 | 139,500 | **0,018** |
| Opća bol / General pain | 19,29 | 25,42 | 163,000 | 0,111 |
| Dentalna bol / Dental pain | 12,5 | 34,5 | 0,000 | **<0,001** |

Legenda: [a] aritmetička sredina ranga, [b] Mann Whitneyev U test

Ispitanici koji su doživjeli ranije loše iskustvo povezano s odlaskom stomatologu i imaju umjerenu do jaku dentalnu anksioznost postižu statistički značajno veći skor na ljestvici dentalne boli (DAS) p<0,001 (tablica 2).

S obzirom na stupanj opće boli, kod ispitanika koji su doživjeli ranije loše iskustvo povezano s odlaskom stomatologu, nije dobivena statistički značajna razlika između onih s blagom dentalnom anksioznosti u odnosu na one s umjerenom do jakom dentalnom anksioznosti (tablica 2).

Kako bismo ispitali odnos učestalosti odlaska na stomatološki pregled i razine dentalne anksioznosti primijenjen je hi-kvadrat test. Rezultati pokazuju da ispitanici s blagom dentalnom anksioznošću statistički značajno češće posjećuju stomatologa u odnosu na ispitanike s umjerenom do jakom dentalnom anksioznošću ($\chi^2$=5,923, p=0,015).

## RASPRAVA

Pošli smo od pretpostavke da ranije loše iskustvo povezano s odlaskom stomatologu (tijekom djetinjstva) utječe na porast dentalne anksioznosti odnosne dentalne fobije, da ispitanici s dentalnom anksioznošću/fobijom imaju niži prag za dentalnu bol te da ispitanici s višim stupnjem dentalne anksioznosti i dentalnom fobijom rjeđe posjećuju stomatologa. Ovo istraživanje učinjeno je na skupini ispitanika

The subjects who had a previous unpleasant experience with the dentist and had moderate to strong dental anxiety achieved statistically significant higher scores on the scale of dental pain (DAS) p<0.001 (Table 2).

Regarding the degree of general pain, there was no statistically significant difference in scores observed between the subjects with mild dental anxiety and strong mental anxiety, within the group of subjects who had a previous unpleasant experience with the dentist (Table 2).

The Chi-squared test was applied in order to examine the relation between the frequency of visiting the dentist for a checkup and the level of dental anxiety. The results showed that the subjects with mild dental anxiety visited the dentist statistically significant more often than those with moderate to strong dental anxiety ($\chi$2=5.923, p=0.015).

## DISCUSSION

The starting hypothesis of this paper was that a previous unpleasant experience with a dentist (during childhood) causes an increase in dental anxiety/phobia and that the subjects with dental anxiety/phobia have a lower level of pain tolerance. The subjects with a higher level of dental anxiety/phobia visit their dentist less often. This study was conducted on a group of subjects with average age of 39.46, married or single, most with high school diplomas and

prosječne dobi 39,46 godina, oženjeni ili samci, većina sa srednjoškolskim i visokoškolskim obrazovanjem te većina zaposleni (tablica 1).

## Ranije loše iskustvo vezano za odlazak stomatologu povezano je s većom učestalosti dentalne anksioznosti/fobije

Rezultati ovog istraživanja pokazali su da ranije loše iskustvo povezano s odlaskom stomatologu utječe na stupanj dentalne anksioznosti (tablica 2). Rezultati ovog rada u skladu su s podatcima iz literature o dentalnoj anksioznosti. Dentalna anksioznost/fobija je neopravdan, nerealan, dugotrajan i pretjerano jaki strah (27). Neka istraživanja pokazala su da stupanj tolerancije nelagode (distresa) utječe na stupanj dentalne anksioznosti, na razinu straha od boli i osjetljivost na anksioznost kod stomatoloških bolesnika općenito (28). Dentalna anksioznost/fobija može utjecati na oralno zdravlje, izbjegavanje stomatološkog tretmana kao i na lošiju kvalitetu života povezanu s oralnim zdravljem (29). Xu i Xia kod skupine ispitanika ispitali su čimbenike koji utječu na dentalnu anksioznost pri vađenju trećeg molara i ustanovili da je razina dentalne anksioznosti, pored ostalog, veća kod onih s ranijim lošim iskustvom pri vađenju zuba te kod onih s lošijom samoprocjenom oralnog zdravlja (30,31).

Strah od odlaska stomatologu najčešće je stečeni strah temeljen na ranijim iskustvima u stomatološkoj ordinaciji. Ranije loše iskustvo uglavnom se odnosi a one pacijente koji su upoznali stomatologa kao djeca, kada je bila potrebna intervencija radi otklanjanja akutne boli: trauma, pulpitis (27). Rezultati našeg istraživanja podupiru pretpostavku da se loše iskustvo u djetinjstvu može upamtiti i da osobe s takvim iskustvom mogu imati posljedice i u odrasloj dobi. Važno je pažljivo se odnositi prema djeci korisnicima stomatoloških usluga kako bi se to izbjeglo.

some with university degrees, mostly employed and working (Table 1).

## An earlier unpleasant experience with a dentist was connected to an increased frequency of dental anxiety/phobia

The results of this study show that an earlier unpleasant experience with a dentist influences the level of dental anxiety (Table 2). The results are congruent with the data about dental anxiety from the literature. Dental anxiety/phobia is an unjustifiable, unrealistic, long-term and overly strong fear (27). Some studies have shown that the level of tolerance to distress affects the level of dental anxiety, the level of fear of pain and the sensitivity to anxiety in dental patients in general (28). Dental anxiety/phobia can affect oral health, avoidance of seeking dental help and worse quality of life linked to oral health (29). Xu and Xia used a group of subjects to examine the factors that influence dental anxiety during extraction of the third molar and concluded that the dental anxiety levels, among other things, were greater among subjects with a previous unpleasant experience with tooth extraction and worse oral health self-assessment scores (30, 31).

The fear of visiting the dentist is most commonly an acquired fear based on earlier unpleasant experiences at the dental clinic. The unpleasant experience applies mostly to the patients who met the dentist as children, when they needed a treatment for soothing an acute pain: trauma, pulpitis (27). This study, as well as our own research results, support the hypothesis that an unpleasant experience during childhood can be remembered and that people with such an experience can suffer consequence even as adults. It is very important to carefully treat pediatric patients in order to avoid those consequences.

Na pojavu dentalne anksioznosti mogu utjecati i drugi čimbenici, kao na primjer drugi istodobno prisutni emocionalni problemi (27). Neka su istraživanja pokazala da negativno iskustvo povezano s odlaskom stomatologu uzrokuje direktno kondicioniranje, zatim, da značajan utjecaj može imati indirektno učenje iz iskustva drugih ljudi, utjecaj medija, doživljena bol, obilježja ličnosti kao i utjecaji iz obitelji i okoline (29,32,33).

U ovom smo radu ispitali anksioznost kao stanje, uz pomoć STAI-X-1 ljestvice koja mjeri različita obilježja anksioznosti unutar ličnosti pojedinca kao što je strepnja, napetost, nervoza i zabrinutost. Anksioznost izmjerena ovom ljestvicom ne odnosi se samo na dentalnu anksioznost već na anksioznost kao stanje u specifičnoj situaciji. U ovom istraživanju radi se o anksioznosti kao stanju u vrijeme ispitivanja. Dakle, ispitanici s višim stupnjem anksioznosti kao stanja pri posjetu stomatologu imali su viši stupanj strepnje, napetosti, zabrinutosti ili nervoze. Utvrdili smo da oni ispitanici koji imaju ranije loše iskustvo vezano za odlazak stomatologu i dentalnu anksioznost/fobiju imaju i viši stupanj anksioznosti kao stanja (tablica 2). U ovom istraživanju nisu učinjene analize koje bi potvrdile je li viši stupanj anksioznosti kao stanja rezultat ranijeg lošeg iskustva vezanog za odlazak stomatologu ili se radi o ispitanicima koji imaju viši stupanj anksioznosti kao crtu ličnosti (*trait*).

## Dentalna anksioznost/fobija povezana je s višim rezultatima na ljestvici dentalne boli

Ispitanici s dentalnom anksioznošću/fobijom postigli su značajno više rezultate na ljestvici dentalne boli (tablica 2). Slične rezultate nalazimo i u literaturi. Viši stupanj anksioznosti povezan je s jačom očekivanom boli. Činjenica je da je ovakvih istraživanja malo na populaciji odraslih, dok su Lamarca i sur. ispitivanjem na

Other factors, such as concurrent emotional problems, may help cause the emergence of dental anxiety (27). Some studies have shown that negative dental experiences cause direct conditioning. Additionally, indirect leaning from the experience of others, the influence of the media, experienced pain, personality traits, family and surroundings can have a significant impact (29, 32, 33).

In the present study, we examined the level of the anxiety state using the STAI-X-1 scale, which measures anxiety traits within the individual's personality, such as dread, tension, nervousness and worriedness. The anxiety thus measured is not related to dental anxiety only, but to anxiety state in a specific situation. In the present study, what was measured was anxiety at the time of the test. Furthermore, the subjects with higher level of anxiety states, during the visit to the dentist had a higher level of dread, tension, worriedness and nervousness. The results of this study have shown that subjects with a previous unpleasant experience with the dentist and dental anxiety/phobia also have a higher level of anxiety state (Table 2). In the present study, no analyses were perform that would confirm or disprove whether the higher anxiety state was a result of a previous unpleasant experience with the dentist or if the subjects had higher levels of anxiety as a personality trait.

## Dental anxiety/phobia is associated with higher dental pain scale results

In the present study, subjects with dental anxiety/phobia achieved statistically significant higher scores on the scale of dental pain (Table 2). These results are congruent with those in the literature. Higher level of anxiety was linked to the expected stronger pain. It is a fact that there have been few studies like this conducted on adults, while Lamarca et al. conduct-

uzorku djece dobili da su djeca s visokom razinom stresa i visokim stupnjem anksioznosti kao stanja i anksioznosti kao osobina ličnosti imali veću očekivanu bol. Očekivana bol bila je veća od percipirane boli tijekom zahvata. Anksioznost je utjecala na iskrivljenu procjenu očekivane boli (34,35). Slične rezultate nalazimo u radovima više autora uključujući Badela i sur. koji su našli da je orofacijalna bol povezana s višim stupnjem anksioznosti kao stanja (na ljestvici STAI-X-1), dok anksioznost kao obilježje ličnosti (na STAI-X-2 ljestvici) nije bila značajno povezana s orofacijalnom boli (36-38). De La Torre Canales u preglednom članku, temeljem 14 analiziranih radova, kod ispitanika s poremećajima u području temporomandibularnog zgloba koji su trpjeli bol (od čega ih 2,6 % do 24 % ima bol jakog intenziteta), našli su somatizacije umjerenog do teškog stupnja kod 28,5 % do 76,6 % te depresivnost umjerenog do teškog stupnja kod 21,4% do 60.1% ovih bolesnika (39). Iz ovog rada vidljivo je da je bol vezana za stomatognati sustav u vezi s nekim od emocionalnih stanja (somatizacije, depresivnost) slično kao što je i u našem istraživanju dentalna bol jače izražena kad je viša dentalna anksioznost/fobija.

Kod većine pacijenata je uvriježeno mišljenje da su mnogi medicinski zahvati povezani s određenom razinom boli ili nekim drugim oblikom nelagode. Smatra se da je stomatološka ordinacija na vrhu „top liste“ očekivane boli pa stoga i po broju ljudi koji imaju strah od odlaska stomatologu (27). Tako Dou i sur. nalaze da ispitanici s pulpitisom koji trpe jaku dentalnu bol u 83,1 % slučajeva imaju umjerenu do jaku dentalnu anksioznost (40). Bol ima krucijalnu ulogu u razvoju dentalne anksioznosti. Bol koja se javlja tijekom stomatološkog tretmana smatra se elementarnim razlogom za razvoj dentalne fobije (41-45). Osim čimbenika koji dolaze od bolesnika, važni su i čimbenici iz okoline. Više autora potvrdilo je dentalni strah kod roditelja važan čimbenik za razvoj dentalne anksiozno-

ed research on children and found that children with high levels of stress, high anxiety state and anxiety traits had greater expected pain scores. The expected pain was greater than the pain perceived during the procedure. Anxiety caused the patients to have a distorted view of the expected pain (34, 35). Other authors have reported similar findings, including Badel et al., who found that orofacial pain was linked to higher levels of anxiety state (STAI-X-1) while anxiety as personality trait (STAI-X-2 scale) was not significantly linked to orofacial pain (36-38). A review article by De La Torre Canales based on an analysis of 14 studies found that, for subjects with injuries associated with the temporomandibular joint that suffered pain (of which 2.6% do 24.0% suffered high intensity pain), somatizations of moderate to high levels were found in 28.5% to 76.6% of subjects and depression of moderate to high level in 21.4% to 60.1% of subjects (39). This paper shows that pain in the stomatognathic system is connected to some of the emotional states (somatization, depression), similarly to our own study where dental pain was also more prominent when the level of dental anxiety/phobia was higher.

Most patients think many medical procedures are associated with at least to some degree of pain or some other form of discomfort. In general, it is believed that dental clinics are at the top of the list of expected pain levels and the number of people who are afraid of going to the dentist (27). Dou et al. found that subjects with pulpitis that suffer strong dental pain have moderate to strong dental anxiety in 83.1% of cases (40). Pain plays a crucial role in the development of dental anxiety. Pain that emerges during a dental treatment is considered to be the elementary reason for development of dental phobia (41-45). Apart from the patient-related factors, environment factors matter too. Several authors have confirmed that dental fear in parents is an important fac-

sti/fobije (46,47), da je dentalna anksioznost/fobija povezana s dentalnom boli (48). Ova istraživanja idu u prilog povezanosti dentalne anksioznosti/fobije s dentalnom boli kao što smo i mi dobili našim istraživanjem.

## Ispitanici s višim stupanjem dentalne anksioznosti i dentalnom fobijom rjeđe posjećuju stomatologa

Utvrdili smo da odrasle osobe s ranijim lošim iskustvom vezanim za odlazak stomatologu, a koje imaju viši stupanj dentalne anksioznosti i dentalnu fobiju rjeđe posjećuju stomatologa ($\chi 2=5{,}923$, $p=0{,}015$). Osim ovog istraživanja niz studija potvrdilo je da kod bolesnika s višim stupnjem dentalne anksioznosti postoji veća vjerojatnost da neće redovito odlaziti stomatologu ili će u potpunosti izbjegavati stomatološku skrb (14,49,50). Kao što je gore navedeno, ispitanici s ranijim lošim iskustvom povezanim s odlaskom stomatologu imaju veću razinu dentalne anksioznosti/fobije. U ovom istraživanju nisu rađene statističke analize kojima bismo dokazali da upravo oni ispitanici koji imaju ranije loše iskustvo povezano s odlaskom stomatologu rjeđe posjećuju stomatologa. Budući da ispitanici s ranijim lošim iskustvom povezanim s odlaskom stomatologu češće imaju dentalnu anksioznost/fobiju pretpostavljamo da bi loše ranije iskustvo moglo indirektno utjecati na učestalost posjeta stomatologu. Stoga želimo istaknuti da loše ranije iskustvo povezano s odlaskom stomatologu, kao i dentalna anksioznost/fobija može rezultirati lošijim oralnim zdravljem. Isto potvrđuje niz istraživanja. Na primjer, Doerr i sur. nalaze značajnu povezanost između dentalne anksioznosti i lošeg oralnog zdravlja (51). Eitner i sur. ustanovili su povezanost između povećane dentalne anksioznosti i karijesa (49). Izbjegavanje posjeta stomatologu, povezano s neugodnim iskustvima tijekom stomatološkog zahvata, počinje još u djetinjstvu (52,53).

tor in development of dental anxiety/phobia (46, 47), moreover, dental anxiety/phobia is connected to dental pain (48). These studies agree on the connection between dental anxiety/phobia and dental pain, similarly to our own findings.

## The subjects with a higher level of dental anxiety and dental phobia visit the dentist less often

The results of this study have shown that adults with a previous unpleasant experience with the dentist visit the dentist less often ($\chi 2=5.923$, $p=0.015$). A number of studies confirmed that the patients with a higher level of dental anxiety have a higher probability of missing regular dentist appointments or of completely avoiding dental care (14, 49, 50). As mentioned above, the subjects with a previous unpleasant experience with the dentist have a higher level of dental anxiety/phobia, which can result in worse oral health, as confirmed by several research papers. No statistical analyses were perform as a part of this research that would demonstrate that exactly those subjects who had an unpleasant earlier experience with a dentist visit the dentist less often. Since the subjects with an unpleasant earlier experience with a dentist were more commonly found to have dental anxiety/phobia, we assume the earlier unpleasant experience could indirectly affect the frequency of the visits to the dentist. Therefore, we wish to point out that an unpleasant earlier experience with a dentist, as well as dental anxiety/phobia, can result in worsened oral health. The above has been confirmed in a number of studies. For example, Doerr et al. found a significant connection between dental anxiety and bad oral health (51). Eitner et al. established a connection between increased dental anxiety and dental caries (49). Avoiding dentist appointments linked to an unpleasant experience begins at an early age (52, 53).

Uzevši u obzir gore navedene nalaze može se zaključiti da prevencija dentalne anksioznosti počinje u dječjoj dobi prevencijom lošeg iskustva povezanog s odlaskom stomatologu. Osobe koje nemaju dentalnu anksioznost redovito će posjećivati stomatologa. Dakle, prevencija lošeg iskustva povezanog s odlaskom stomatologu na indirektan način utječe na zaštitu oralnog zdravlja.

S ciljem prevencije lošeg iskustva tijekom stomatološkog zahvata stručnjaci na području dentalne medicine primjenjuju različite tehnike, uključujući tehnike distrakcije pažnje, kao što je virtualna stvarnost (54-57) ili računalne igrice (58,59), kako u radu s djecom tako i u radu sa stomatološkim pacijentom u odrasloj dobi.

Smatra se kako će odrasli koji imaju dentalnu anksioznost/fobiju izbjegavati odlazak stomatologu kao i stomatološke zahvate. Epidemiološka istraživanja pokazuju da oko 5-10 % odraslih zbog straha ne odlazi na redovite preglede (20). Izbjegavanje posjeta stomatologu, osim na oralno zdravlje može utjecati i na kvalitetu života vezanu za oralno zdravlje, kao što su ustanovili Gisler i sur. Isti autori pronašli su da ispitanici s visokim stupnjem dentalne anksioznosti imaju 3,55 puta više izgleda za lošiju kvalitetu života povezanu s oralnim zdravljem u odnosu na one s nižim stupnjem dentalne anksioznosti (60).

Rezultati ovog istraživanja u skladu su s nizom gore citiranih istraživanja te potvrđuju kako je loše iskustvo vezano za odlazak stomatologu u djetinjstvu rizik za pojavu dentalne anksioznosti, a dentalna anksioznost je potom prepreka redovitim posjetima stomatologu. Isto može rezultirati lošijom skrbi za oralno zdravlje.

## ZAKLJUČCI

Temeljem rezultata ovog istraživanja možemo zaključiti da ranije neugodno iskustvo povezano s odlaskom stomatologu utječe na pojavu

Taking the above into consideration, we can conclude that the prevention of dental anxiety begins in childhood by preventing unpleasant experiences with the dentist. Persons without dental anxiety will visit the dentist more often. Thus, prevention of an unpleasant experience with the dentist indirectly affects oral health.

Experts in the field of dental medicine employ different techniques with the goal of preventing an unpleasant experience with the dentist, including attention distraction, virtual reality (54-57) or video games (58, 59), both when working with children and when working with adults.

It is believed that adults with dental anxiety/phobia will avoid the dentist and dental procedures. Epidemiological research shows that 5-10% of adults miss regular appointments due to fear (20). Apart from influencing oral health, avoiding the dentist can have an impact on quality of life, as established by Gisler et al. These authors found that subjects with a high level of dental anxiety had a 3.55 times higher chance of having worse quality of life related to oral health in comparison with those with lower levels of dental anxiety (60).

The results of the present study are congruent with the results of a number of research papers mentioned above and confirm that an unpleasant experience in childhood poses a risk for developing dental anxiety, which itself becomes an obstacle to regular dentist visits. The abovementioned can result in worse dental care.

## CONCLUSIONS

Based on the results of this study, we can conclude that a previous unpleasant experience with the dentist helps the development of dental anxiety and dental phobia. Persons with a previous unpleasant experience with

dentalne anksioznosti i dentalne fobije. Osobe s ranijim neugodnim iskustvom povezanim s odlaskom stomatologu i višom razinom dentalne anksioznosti odnosno dentalnom fobijom, imaju i viši stupanj anksioznosti kao stanja. Dentalna anksioznost/fobija kod osoba s ranijim neugodnim iskustvom povezanim s odlaskom stomatologu povezana je i s nižim pragom za dentalnu bol, ali ne i s nižim pragom za bol općenito. Viši stupanj dentalne anksioznosti i dentalna fobija povezani su s rjeđim posjetima stomatologu.

Za pretpostaviti je da ovakvo ponašanje može biti jedan od čimbenika za razvoj dentalne patologije budući da takvi pojedinci izbjegavaju preventivne preglede i pravovremene stomatološke intervencije s ciljem zaštite i održavanja zdravlja usne šupljine. Kako bismo izbjegli razvoj dentalne anksioznosti i dentalne fobije važno je prevenirati loše iskustvo povezano s odlaskom stomatologu tijekom djetinjstva. Dakle, potrebno se s pažnjom odnositi prema djeci pri stomatološkim intervencijama, a kod odraslih stomatoloških bolesnika imati na umu dentalnu anksioznost/fobiju pri planiranju preventivnih mjera kao i pri stomatološkim intervencijama.

## OGRANIČENJA ISTRAŽIVANJA

Ograničenja ovog istraživanja odnose se na relativno mali uzorak ispitanika čime je generalizacija dobivenih rezultata upitna. Povezano s ispitivanjem anksioznosti kao stanja te ispitivanjem dentalne boli uzorak nije homogeniziran s obzirom da svi ispitanici nisu očekivali isti stomatološki zahvat. Skupinu nismo homogenizirali prema ovom kriteriju, jer smo smatrali da će skupina s ranijim lošim iskustvom imati viši stupanj anksioznosti kao stanja bez obzira na zahvat koji očekuje. Činjenica je da bismo dobili relevantnije podatke da je uzorak homogeniziran i prema stomatološkom zahvatu koji se očekuje. Povezano s učestalošću posjeta stomatologu naši su rezultati pokazali da ispi-

the dentist and higher levels of dental anxiety/phobia also have a higher level of state anxiety. Dental anxiety/phobia in persons with a previous unpleasant experience with the dentist is linked to lower tolerance to dental pain, but not with lower tolerance to pain in general. A higher degree of dental anxiety and dental phobia are associated with less frequent visits to the dentist.

This type of behavior can be one of the factors in the development of dental pathology, since such individuals avoid preventive checkups and timely dental procedures with the goal of protecting and maintaining oral health. In order to avoid the development of dental anxiety and dental phobia, it is important to prevent unpleasant experiences with dentists during childhood. Special attention and care must be given to children during dental procedures, and with adults it is necessary to bear in mind and be wary of dental anxiety/phobia when planning preventive measures as well as during dental procedures.

## STUDY LIMITATIONS

The limitations of this study are tied to the relatively small subject sample, which makes the generalization of the results questionable. In terms of investigating state anxiety and dental pain, the sample is not homogenized, since not all subjects were awaiting the same dental procedure. The sample could not be homogenized according to this criterion because we were of the opinion that the group with an unpleasant earlier experience would have a higher degree of state anxiety no matter what dental procedure they were expecting. The fact is that we would have gotten more relevant data had the sample been homogenized according to the expected dental procedure. In terms of the frequency of visits to the dentist, our results have shown that the subjects with dental anxiety/phobia visit the dentist less often. We deem

tanici s dentalnom anksioznošću/fobijom rjeđe odlaze stomatologu. Smatramo važnim ispitati i utječe li loše iskustvo u djetinjstvu na učestalost posjeta stomatologu u odrasloj dobi, odnosno bilo bi vrijedno učiniti „analize traga" i ispitati je li ispitanici s lošim ranijim iskustvom povezanim s odlaskom stomatologu koji razviju dentalnu anksioznost/fobiju rjeđe odlaze stomatologu ili je loše ranije iskustvo direktno povezano s učestalošću posjeta stomatologu.

it important to investigate if an unpleasant experience in childhood has an effect on the frequency of visiting the dentist during adulthood, which means it would be worthwhile to do "trace analyses" and investigate if the subjects with an unpleasant earlier experience with the dentist who develop dental anxiety/phobia visit the dentist less often or if the earlier unpleasant experience is directly tied to the frequency of the visits.

## LITERATURA / *REFERENCES*


1. Barauskas I, Barauskienė K, Janužis G. Dental anxiety and self-perceived stress in Lithuanian University of Health Sciences hospital patients: a cross-sectional study. Stomatologija 2019; 21(2): 42-6.
2. Randall CL, Shaffer JR, McNeil DW, Crout RJ, Weyant RJ, Marazita ML. Toward a genetic understanding of dental fear: evidence of heritability. Community Dent Oral Epidemiol 2017; 45(1): 66-73.
3. De Stefano R. Psychological factors in dental patient care: odontophobia. Medicina (Kaunas) 2019; 55(10): 678.
4. Singh H, Bhaskar DJ, Rehman R. Psychological aspects of odontophobia. Int J Dent Med Res 2015; 1(6): 210-12.
5. Facco E, Zanette G. The Odyssey of dental anxiety from prehistory to the present: a narrative review. Front Psychol 2017; 8: 1155.
6. Enkling N, Marwinski G, Jöhren P. Dental anxiety in a representative sample of residents of a large German city. Clin Oral Invest 2006; 10: 84-91.
7. Pohjola V, Rekola A, Kunttu K, Virtanen JI. Association between dental fear and oral health habits and treatment need among university students in Finland: a national study. BMC Oral Health 2016; 16: 26.
8. Quteish Taani DS. Dental fear among a young adult Saudian population. Int Dent J 2001; 51: 62-6.
9. Appukuttan D, Subramanian S, Tadepalli A, Damodaran LK. Dental anxiety among adults: an epidemiological study in South India. N Am J Med Sci 2015; 7: 13-18.
10. Halonen H, Salo T, Hakko H, Räsänen P. The association between dental anxiety, general clinical anxiety and depression among Finnish university students. Oral Health Dent Manag 2014; 13: 320-5.
11. Humphris G, Crawford JR, Hill K, Gilbert A, Freeman R. UK population norms for the modified dental anxiety scale with percentile calculator: adult dental health survey 2009 results. BMC Oral Health 2013; 13: 29.
12. Smith AJE, Bildt MM. Serie: Communicatie in de tandartspraktijk. Omgaan met angst in de tandartspraktijk [Series: Communication in the dental practice. Dealing with anxiety in the dental office]. Ned Tijdschr Tandheelkd 2019; 126(11): 571-8.
13. Costa LR, Bendo CB, Daher A, Heidari E, Rocha RS, de Sousa Costa Moreira AP *et al.* A curriculum for behaviour and oral healthcare management for dentally anxious children - recommendations from the Children Experiencing Dental Anxiety: collaboration on research and education (CEDACORE). Int J Paediatr Dent 2020; 30(5): 556-69.
14. Singh A, Shukla A, Gupta S, Srivastava R. Odontophobia and the cycle of avoidance: A review. J Clin Den Res Edu 2015; 4(11): 40-8.
15. Sheshukova OV, Polishchuk TV, Kostenko VG, Trufanova VP, Bauman SS, Davydenko VY. Consideration of childhood psychological factors at dental appointment. Wiad Lek 2018; 71(7): 1305-09.
16. Al Qhtani FA, Pani SC. Parental anxiety associated with children undergoing dental treatment. Eur J Paediatr Dent 2019; 20(4): 285-9.
17. Felemban OM, Alshoraim MA, El-Housseiny AA, Farsi NM. Effects of familial characteristics on dental fear: A cross-sectional study. J Contemp Dent Pract 2019; 20(5): 610-15.
18. Alsadat FA, El-Housseiny AA, Alamoudi NM, Elderwi DA, Ainosa AM, Dardeer FM. Dental fear in primary school children and its relation to dental caries. Niger J Clin Pract 2018; 21(11): 1454-60.
19. Packyanathan JS, Lakshmanan R, Jayashri P. Effect of music therapy on anxiety levels on patient undergoing dental extractions. J Family Med Prim Care 2019; 8(12): 3854-60.
20. Shetty V, Suresh LR, Hegde AM. Effect of virtual reality distraction on pain and anxiety during dental treatment in 5 to 8 year old children. J Clin Pediatr Dent 2019; 43(2): 97-102.
21. Khandelwal M, Shetty RM, Rath S. Effectiveness of distraction techniques in managing pediatric dental patients. Int J Clin Pediatr Dent 2019; 12(1): 18-24.
22. Kruse AB, Heil HK, Struß N, Fabry G, Silbernagel W, Vach K *et al*. Working experience is not a predictor of good communication: Results from a controlled trial with simulated patients. Eur J Dent Educ 2020; 24(2): 177-85.
23. Spielberger CD. Priručnik za upitnik anksioznosti kao stanja i osobine ličnosti STAI. Jastrebarsko: Slap, 2001.

24. Newton JT, Buck DJ. Anxiety and pain measures in dentistry: A guide to their quality and application. J Am Dent Assoc 2000; 131: 1449-57.
25. Smith, TA, Heaton LJ. Fear of dental care: are we making any progress? J Am Dent Assoc 2003; 134: 1101-08.
26. Armfield JM. How do we measure dental fear and what are we measuring anyway? Oral Health Prev Dent 2010; 8(2): 107-15.
27. Zarevski P, Škrinjarić I, Vranić A. Psihologija za stomatologe. Obrazac o dentalnoj anksioznosti. Jastrebarsko: Naklada Slap, 2005.
28. Addicks SH, McNeil DW, Randall CL, Goddard A, Romito LM, Sirbu C *et al*. Dental care–related fear and anxiety: distress tolerance as a possible mechanism. JDR Clin Trans Res 2017; 2(3): 304-11.
29. Carter AE, Carter G, Boschen M, Al Shwaimi E, George R. Pathways of fear and anxiety in dentistry: a review. World J Clin Cases 2014; 12(11): 642-53.
30. Xu JL, Xia R. Influence factors of dental anxiety in patients with impacted third molar extractions and its correlation with postoperative pain: a prospective study. Med Oral Patol Oral Cir Bucal 2020; 25(6): 714-19.
31. Tarazona-Álvarez P, Pellicer-Chover H, Tarazona-Álvarez B, Peñarrocha-Oltra D, Peñarrocha-Diago M. Hemodynamic variations and anxiety during the surgical extraction of impacted lower third molars. J Clin Exp Dent 2019; 11(1): e27-e32.
32. Locker D, Liddell A, Dempster L, Shapiro D. Age of onset of dental anxiety. J Dent Res 1999; 78(3): 790-6.
33. Drachev SN, Brenn T, Trovik TA. Prevalence of and factors associated with dental anxiety among medical and dental students of the Northern State Medical University, Arkhangelsk, North-West Russia. Int J Circumpolar Health 2018; 77(1): 1454786.
34. De A. Lamarca G, Vettore MV, Angela M, da Silva M. The Influence of stress and anxiety on the expectation, perception and memory of dental pain in school children. Dent J (Basel) 2018; 6(4): 60.
35. Reyes-Gilabert E, Luque-Romero LG, Bejarano-Avila G, Garcia-Palma A, Rollon-Mayordomo A, Infante-Cossio P. Assessment of pre and postoperative anxiety in patients undergoing ambulatory oral surgery in primary care. Med Oral Patol Oral Cir Bucal 2017; 22(6): e716-e722.
36. Badel T, Zadravec D, Bašić Kes V, Smoljan M, Kocijan Lovko S, Zavoreo I *et al*. Orofacial pain – diagnostic and therapeutic challenges. Acta Clin Croat 2019; 58(Suppl 1): 82-9.
37. Turp JC. Failure in chronic pain therapy across the disciplines. Craniomand Func 2017; 9: 197-208.
38. Badel T, Kocijan Lovko, S, Zadravec, D. Anxiety and temporomandibular disorders: a relationship in chronic pain development. In: Shiloh AR (ed.) Anxiety disorders - Risk factors, genetic determinants and cognitive-behavioral disorders. New York: Nova Science Publishers, 2014.
39. De La Torre Canales G, Câmara-Souza MB, Muñoz Lora VRM, Guarda-Nardini L, Conti PCR, Rodrigues Garcia RM *et al*. Prevalence of psychosocial impairment in temporomandibular disorder patients: a systematic review. J Oral Rehabil 2018; 45(11): 881-889.
40. Dou L, Vanschaayk MM, Zhang Y, Fu X, Ji P, Yang D. The prevalence of dental anxiety and its association with pain and other variables among adult patients with irreversible pulpitis. BMC Oral Health 2018; 18(1): 101.
41. van Wijk AJ, Hoogstraten J. Experience with dental pain and fear of dental pain. J Dent Res 2005; 84(10): 947-50.
42. Rohleder N, Wolf JM, Maldonado EF, Kirschbaum C. The psychosocial stress-induced increase in salivary alpha-amylase is independent of saliva flow rate. Psychophysiology 2006; 43(6): 645-52.
43. Lee KC, Bassiur JP. Salivary alpha amylase, dental anxiety, and extraction pain: a pilot study. Anesth Prog 2017; 64(1): 22-8.
44. Jeddy N, Nithya S, Radhika T, Jeddy N. Dental anxiety and influencing factors: a cross-sectional questionnaire-based survey. Indian J Dent Res 2018; 29(1): 10-15.
45. Wiener RC. Dental fear and delayed dental care in Appalachia-West Virginia. J Dent Hyg 2015; 89(4): 274-81.
46. Dahlander A, Soares F, Grindefjord M, Dahllöf G. Factors associated with dental fear and anxiety in children aged 7 to 9 years. Dent J (Basel) 2019; 7(3): 68.
47. Wu L, Gao X. Children's dental fear and anxiety: exploring family related factors. BMC Oral Health 2018; 18(1): 100.
48. Youn-Soo S, Ah-Hyeon K, Eun-Young J, So-Youn A. Dental fear & anxiety and dental pain in children and adolescents; a systemic review. J Dent Anesth Pain Med 2015; 15(2): 53-61.
49. Eitner S, Wichmann M, Paulsen A, Holst S. Dental anxiety - an epidemiological study on its clinical correlation and effects on oral health. J Oral Rehabil 2006; 33(8): 588-93.
50. Armfield JM, Stewart JF, Spencer AJ. The vicious cycle of dental fear: exploring the interplay between oral health, service utilization and dental fear. BMC Oral Health 2007; 7: 1.
51. Doerr PA, Lang WP, Nyquist LV, Ronis DL. Factors associated with dental anxiety. J Am Dent Assoc 1998; 129(8): 1111-19.
52. Alshoraim MA, El-Housseiny AA, Farsi NM, Felemban OM, Alamoudi NM, Alandejani AA. Effects of child characteristics and dental history on dental fear: cross-sectional study. BMC Oral Health 2018; 18(1): 33.
53. Ahmad A, Ayub Kazi MS, Ahmad I. Evaluation of dental anxiety among children visiting Paediatric Dental Department at Children Hospital. J Pak Med Assoc 2017; 67(10): 1532-5.
54. López-Valverde N, Muriel-Fernández J, López-Valverde A, Valero-Juan LF, Ramírez JM, Flores-Fraile J *et al*. Use of virtual reality for the management of anxiety and pain in dental treatments: a systematic review and meta-analysis. J Clin Med 2020; 9(10): 3086.
55. Ougradar A, Ahmed B. Patients' perceptions of the benefits of virtual reality during dental extractions. Br Dent J 2019; 227(9): 813-16.

56. Carl E, Stein AT, Levihn-Coon A, Pogue JR, Rothbaum B, Emmelkamp P *et al.* Virtual reality exposure therapy for anxiety and related disorders: a meta-analysis of randomized controlled trials. J Anxiety Disord 2019; 61: 27-36.
57. Raghav K, Van Wijk AJ, Abdullah F, Islam MN, Bernatchez M, De Jongh A. Efficacy of virtual reality exposure therapy for treatment of dental phobia: a randomized control trial. BMC Oral Health 2016; 16: 25.
58. Elicherla SR, Bandi S, Nuvvula S, Challa RS, Saikiran KV, Priyanka VJ. Comparative evaluation of the effectiveness of a mobile app (Little Lovely Dentist) and the tell-show-do technique in the management of dental anxiety and fear: a randomized controlled trial. J Dent Anesth Pain Med 2019; 19(6): 369-78.
59. Meshki R, Basir L, Alidadi F, Behbudi A, Rakhshan V. Effects of pretreatment exposure to dental practice using a smartphone dsental simulation game on children's pain and anxiety: a preliminary double-blind randomized clinical trial. J Dent (Tehran) 2018; 15(4): 250-8.
60. Gisler V, Bassetti R, Mericske-Stern R, Bayer S, Enkling N. A cross-sectional analysis of the prevalence of dental anxiety and its relation to the oral health-related quality of life in patients with dental treatment needs at a university clinic in Switzerland. Gerodontology 2012; 29(2): e290-e296.