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Prevalence and severity of TMD in orthodontic patients

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SUMMARY

Introduction Temporomandibular disorder (TMD) is a collective term for numerous symptoms, with the most common being masticatory muscle pain, pain in temporomandibular joints, limited mouth opening, irregular jaw movements, headaches and sound effects in TMJ.

The aim was to determine the prevalence and severity of TMD in orthodontic patients determining whether the type of malocclusion affects the prevalence and severity of TMD.

Material and Methods The study was conducted in the form of Fonseca Anamnestic Index, which classifies TMD severity among examinees (no TMD, mild, moderate and severe TMD). The experimental group consisted of orthodontic patients with confirmed malocclusions, while the control group consisted of dental students with a Class I occlusion and no need for orthodontic treatment. Orthodontic patients were classified into the three subgroups based on malocclusions.

Results In the experimental group, 45.03% of orthodontic patients had some degree of TMD, while among students, that percentage was 56.41%. Compared to Class I, higher percentage of TMD was found among patients with distal and mesial occlusion in experimental group. In the experimental and control groups, the greatest percentage of participants showed mild TMD. The prevalence of TMD was greater in females than in males in the experimental group.

Conclusion The high prevalence of TMD in the control group speaks in favor of its complex etiology, with stress having an important role. Malocclusion is one of many factors which can contribute to the occurrence and severity of TMD, but it cannot be considered the most significant.

Keywords: temporomandibular disfunction – TMD; temporomandibular joint – TMJ; malocclusion; Fonseca questionnaire; Fonseca Anamnestic Index

INTRODUCTION

Temporomandibular dysfunction (TMD) presents a group of masticatory system disorders, which can be a consequence of muscular conditions or those affecting the temporomandibular joint (TMJ). TMD is a common condition, mostly among people aged 20-40 years [1]. The most frequent symptoms are pain in the region of the temporomandibular joint and fatigue of the cranial and fascial muscles, limited or irregular mandible movements, disk displacements and presence of articular clicking [2]. It is prevalent in the non-patient population [3, 4]. The signs appear in up to 60–70% of the population, but only one in four people are aware and seek treatment for their symptoms [5, 6]. The finding that doesn't have a clear explanation is that among the people seeking treatment, the most significant majority are females, almost four times more often than males [5]. Etiology is multifactorial and complex, including anatomical, pathophysiological and psychosocial factors. For the successful management of TMD, it is crucial to identify predisposing and contributing factors and to distinguish between the myofascial cause of TMD and intra-articular disorders of the joint itself [1].

Questionnaires that address the main clinical TMD findings and classify patients in terms of severity levels have been created to simplify evaluation in epidemiologic studies and standardize research samples to obtain and compare results from different studies [7, 8, 9]. According to the recent studies, the Fonseca Anamnestic Index is very sensitive in identifying patients who have TMD, it is indicated for initial screening of patients, and it shows high diagnostic accuracy [10, 11, 12].

The aim of this study was to evaluate the prevalence and severity of TMD in orthodontic patients and determine whether the type of malocclusion affects the incidence and severity of TMD.

MATERIAL AND METHOD

The study was conducted at the Department of Orthodontics, School of Dental Medicine, University of Belgrade. A total of 210 subjects were included in the study. The experimental group consisted of 171 patients who came to seek orthodontic treatment but had not started it yet. Exclusion criteria were the patient's age (older than 12 years), TMD treatment and the presence of orofacial pain or clinical alterations. They received proper instructions about the research goals before answering the Fonseca questionnaire (translated into Serbian) (Figure 1). The patients were

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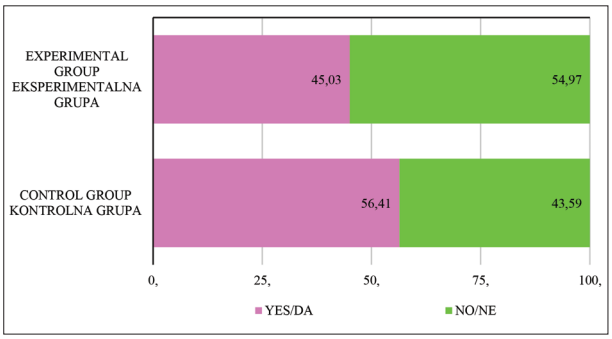
Question Pitanje	NO NE	SOMETIMES PONEKAD	YES DA
1 – Is it difficult for you to open your mouth? 1 – Je li vam teško da otvorate usta?			
2 – Is it hard for you to move your mandible from side to side? 2 – Da li vam je teško da pokrećete vilicu na jednu ili drugu stranu?			
3 – Do you get tired / muscular pain while chewing? 3 – Da li vas bole žvaćni mišići tokom žvakanja?			
4 – Do you have frequent headaches? 4 – Da li imate česte glavobolje?			
5 – Do you have pain on the nape or stiff neck? 5 – Da li imate bol u zadnjem delu vrata ili zatezanje u vratu?			
6 – Do you have earaches or pain in temporomandibular joints? 6 – Da li imate bolove u ušima ili u temporomandibularnom zglobu?			
7 – Have you noticed any TMJ clicking while chewing or when you open your mouth? 7 – Da li ste primetili klik u TMZ tokom žvakanja ili kada otvarate usta?			
8 – Do you clench or grind your teeth? 8 – Da li stežete zube ili škrgućete zubima kada spavate?			
9 – Do your feel your teeth do not articulate well? 9 – Da li osećate da se vaši zubi ne zatvaraju normalno?			
10 – Do you consider yourself a tense (nervous) person? 10 – Da li smatrate sebe nervoznom osobom?			

Figure 1. Fonseca questionnaire
Slika 1. Fonsekin upitnik



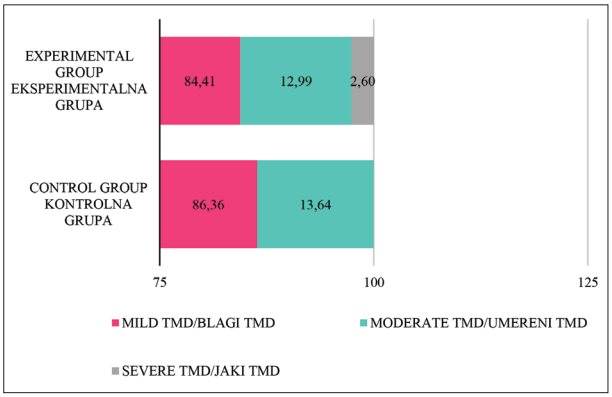
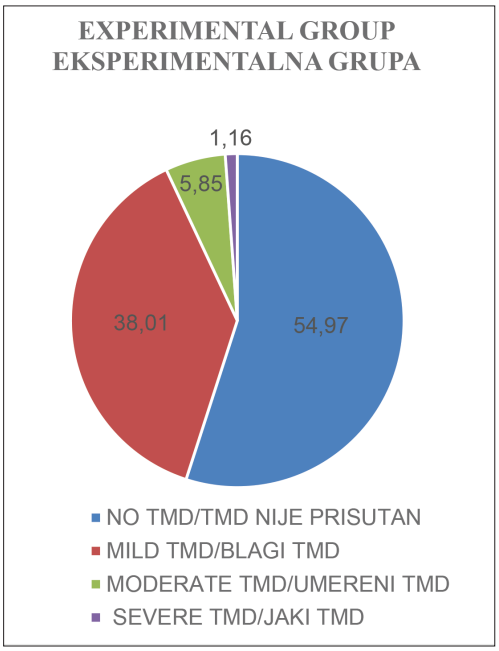


Figure 2. Presence of TMD in experimental and control group
Slika 2. Prisustvo TMD u eksperimentalnoj i kontrolnoj grupi



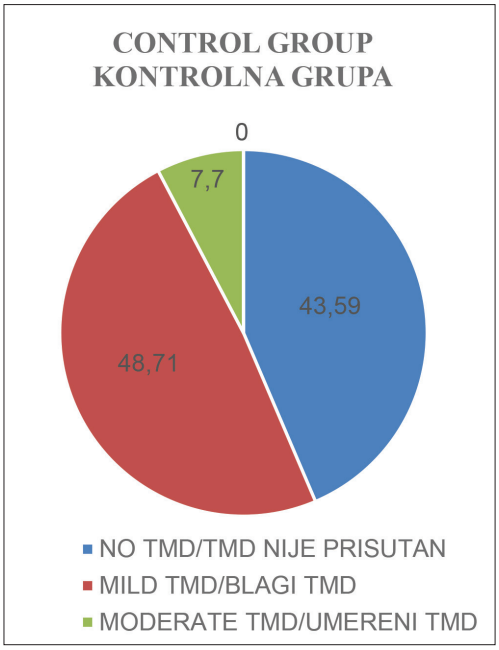


Figure 3. TMD severity in experimental and control group
a) experimental and control group (with TMD); b) experimental group; c) control group
Slika 3. Stepen izraženosti TMD u eksperimentalnoj i kontrolnoj grupi
a) eksperimentalna i kontrolna grupa (sa TMD); b) eksperimentalna grupa; c) kontrolna grupa

instructed to reply to ten questions by choosing only one of the answers indicating different degrees of TMD: yes (10 points), no (0 points), and sometimes (5 points). The sum of the points was used to classify the participants into four categories: TMD free (0 to 15 points); mild TMD (20 to 40), moderate TMD (45 to 60), and severe TMD (70 to 100). According to type of malocclusion (Angle classification), the patients were divided into the three subgroups: Class I, mesial occlusion (1/2-unit Class III and Class III) and distal occlusion (1/2-unit Class II and Class II).

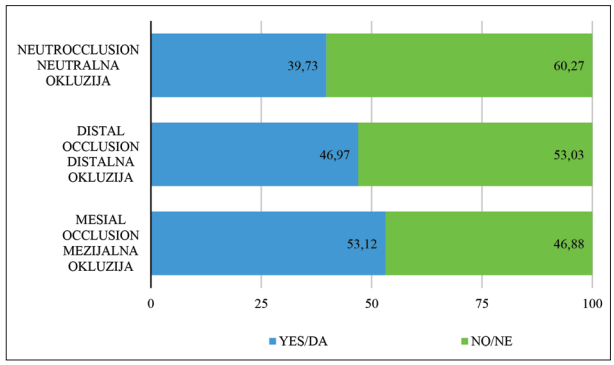


Figure 4. Presence of TMD according to sagittal type of malocclusion (Angle classification)
Slika 4. Prisustvo TMD u odnosu na tip malokluzije u sagitalnom pravcu (klasifikacija po Englu)

Control group consisted of 39 dental undergraduates (24–28 years) with Class I occlusion, and no need for orthodontic treatment. Exclusion criteria for the control group were orthodontic treatment at the moment or in the last two years, TMD treatment and presence of orofacial pain or clinical alterations. The sums of the points were calculated for each patient and student, and compared among the groups and subgroups. A chi-square test was applied to compare the presence and severity of TMD among the groups with the level of significance set at 5% ($p \leq 0.05$).

RESULTS

In the experimental group, 45.03% of patients showed the presence of TMD, and the percentage of participants with TMD in the control group was slightly higher but with no statistical significance (56.41%) (Figure 2). Among orthodontic patients, the great majority showed mild TMD (84.41%), and among dental students, the result was similar, 86.36% had mild TMD according to Fonseca Anamnestic Index (Figure 3). Analyzing results in the experimental group and the influence of malocclusions on the presence and severity of TMD, the presence of TMD was greater in the subgroup with distal and mesial occlusion than in the group with Class I, although the difference was not statistically significant (Figure 4). All the participants who showed severe TMD had mesial occlusion. Considering the gender of the participants, the presence of TMD was slightly greater in females than in males in the group of orthodontic patients, but the difference was not statistically significant (Table 3). Pain during mastication was noticed in 26.9% of participants in the experimental group (answers YES and SOMETIMES), and in the control group that percent was 10.26% (Table 1). More than half of orthodontic patients (53.03%) gave positive answers (YES and SOMETIMES) to the question if they consider themselves a nervous person, whereas that percentage was much higher in the dental students' group (76.93%) (Table 2). Headaches were present in about a third of participants in both groups (Table 1 and Table 2).

Table 1. Answers to each of the questions from the Fonsecca Questionnaire in experimental group
Tabela 1. Odgovori na pitanja iz Fonsekinog upitnika u eksperimentalnoj grupi

EXPERIMENTAL GROUP EKSPERIMENTALNA GRUPA	YES DA	SOMETIMES PONEKAD	NO NE
QUESTION 1 PITANJE BROJ 1	0%	2.92%	97.08%
QUESTION 2 PITANJE BROJ 2	1.75%	8.19%	90.06%
QUESTION 3 PITANJE BROJ 3	4.68%	22.22%	73.10%
QUESTION 4 PITANJE BROJ 4	8.77%	22.22%	69.01%
QUESTION 5 PITANJE BROJ 5	8.19%	21.05%	70.76%
QUESTION 6 PITANJE BROJ 6	1.17%	8.77%	90.06%
QUESTION 7 PITANJE BROJ 7	12.87%	14.04%	73.10%
QUESTION 8 PITANJE BROJ 8	9.35%	23.98%	66.67%
QUESTION 9 PITANJE BROJ 9	42.69%	6.43%	50.88%
QUESTION 10 PITANJE BROJ 10	14.04%	33.92%	52.05%

Table 2. Answers to each of the questions from the Fonsecca Questionnaire in control group
Tabela 2. Odgovori na pitanja iz Fonsekinog upitnika u kontrolnoj grupi

CONTROL GROUP KONTROLNA GRUPA	YES DA	SOMETIMES PONEKAD	NO NE
QUESTION 1 PITANJE BROJ 1	0%	7.69%	92.31%
QUESTION 2 PITANJE BROJ 2	0%	0%	100%
QUESTION 3 PITANJE BROJ 3	0%	10.26%	89.74%
QUESTION 4 PITANJE BROJ 4	15.38%	17.95%	66.67%
QUESTION 5 PITANJE BROJ 5	15.38%	25.64%	58.97%
QUESTION 6 PITANJE BROJ 6	0%	15.38%	84.62%
QUESTION 7 PITANJE BROJ 7	15.38%	17.95%	66.67%
QUESTION 8 PITANJE BROJ 8	28.21%	28.21%	43.59%
QUESTION 9 PITANJE BROJ 9	17.95%	7.69%	74.36%
QUESTION 10 PITANJE BROJ 10	23.08%	53.85%	23.08%

Table 3. Presence of TMD in experimental and control group according to gender
Tabela 3. Prisustvo TMD u eksperimentalnoj i kontrolnoj grupi u odnosu na pol

	EXPERIMENTAL GROUP EKSPERIMENTALNA GRUPA	CONTROL GROUP KONTROLNA GRUPA	PRESENCE OF TMD (EXPERIMENTAL GROUP) PRISUSTVO TMD (EKSPERIMENTALNA GRUPA)	PRESENCE OF TMD (CONTROL GROUP) PRISUSTVO TMD (KONTROLNA GRUPA)
TOTAL UKUPNO	171	39	n = 77 (45.03%)	n = 22 (56.41%)
FEMALE ŽENSKI	111	25	n = 54 (48.65%)	n = 14 (56%)
MALE MUŠKI	60	14	n = 23 (38.3%)	n = 8 (57.14%)

DISCUSSION

The aim of this study was to determine whether there is a connection between malocclusions (Class I occlusion, distal and mesial occlusion) and the prevalence and severity of TMD, using Fonseca Anamnestic Index. Interestingly, the percentage of participants with TMD was greater in the group of dental students than in a group of orthodontic patients. In our study, 56.41% of dental students showed some degree of TMD. A high percentage of dental students with some degree of the disorder is in agreement with the literature. Nomura et al. found a similar percentage (53.21%) of students with TMD [9]. Pedroni et al. showed that TMD was present in 68% of dental students, and in the study Garcia et al. that percent was 61% in a sample of 200 university students, using the same questionnaire [3, 4]. In a study of Bevilaqua-Grossi et al. also among university students, TMD was present in even higher percent (78%) [8]. The fact that our sample included only students with Class I and no need for orthodontic treatment, can be the reason for slightly higher percentages in literature than in the present study.

A recent study also found that professional athletes suffer TMD more frequently than non-athletes [2]. Professional athletes are exposed to greater stress, or psychological pressure caused by the increased training effort and competitions, which can lead to development of temporomandibular dysfunctions [2]. Similarly, academic stress has an impact on student's health and the presence of TMD, which can be explanation for a high percentage of students with TMD in our study [13, 14, 15].

In our control group, analyzing only the group of dental students with TMD, 90.9% of them answered positive (YES or SOMETIMES) to question number 10 - if they considered themselves tense/nervous. That suggests that stress and anxiety have significant correlation with TMD, that was confirmed in numerous studies [13, 14, 15].

Our study also showed that mesial occlusion (1/2-unit class III and Class III) was present in all cases of severe TMD. This is not in line with the study of Pedroni et al. where all the participants with severe TMD had distal occlusion [4]. Henrikson et al. analyzing a sample of girls with Class I and Class II concluded that normal occlusion has lower odds for symptoms and signs of TMD, while some occlusal characteristics, more frequently found in the class II malocclusion group, increased the chance for symptoms and signs of TMD [16]. All these findings suggest that there can be a relationship between the occlusal type and TMD, although the number of study participants should be more significant for that kind of conclusion.

Analyzing the gender of the participants and the presence of TMD, in the experimental group TMD was more frequent in females than in males, which is in agreement with the literature [3-9]. The reason can be found in different physiological characteristics, hormonal status and different characteristics of the connective tissue in females compared to males [5,8,9]. In the control group, this difference between genders was not found, which is in line with the study of Grey et al. who reported that the prevalence of signs and symptoms of TMD should not be different in males and females, in a group of non-patients [17].

Sign and symptoms of TMD can be assessed in different methods. The Fonseca questionnaire allows collecting a large quantity of information in a relatively short period, and at low cost, it is easy to understand and compare with other assessment tools [8]. It shows high diagnostic accuracy and is indicated for the initial screening of patients with TMD [11, 12, 13]. Early and correct identification of the possible etiologic factors will help find the appropriate treatment scheme to reduce or eliminate signs and symptoms of TMD.

CONCLUSION

The results showed that the presence of TMD was not greater in a group of patients with malocclusions compared to a group of dental students with Class I and no need for orthodontic treatment. The high prevalence of TMD in the control group speaks in favor of its complex etiology. TMD was more frequent in patients with mesial and distal occlusion than in orthodontic patients with Class I. Although further studies with more participants are needed, we can conclude that malocclusion is one of many factors that can contribute to the occurrence and severity of TMD but cannot be considered the most significant one.

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Učestalost i izraženost TMD kod ortodontskih pacijenata

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KRATAK SADRŽAJ

Uvod Temporomandibularna disfunkcija (TMD) manifestuje se kao skup simptoma od kojih su najčešći bol u regiji mastikatornih mišića, bol u temporomandibularnim zglobovima, ograničeno otvaranje usta, neregularne kretnje donje vilice, glavobolje i zvučni efekti u temporomandibularnom zglobu.

Cilj ovog rada bio je da se utvrdi učestalost i izraženost TMD kod ortodontskih pacijenata i da se odredi da li tip malokluzije utiče na učestalost i izraženost TMD.

Materijal i metode Istraživanje je sprovedeno u vidu Fonsekinog upitnika koji ispitanike klasifikuje na osnovu izraženosti TMD (bez TMD, blaga, umerena i izražena TMD). Eksperimentalnu grupu činili su ortodontski pacijenti sa potvrđenim ortodontskim nepravilnostima, dok su kontrolnu grupu činili studenti Stomatološkog fakulteta sa okluzijom I klase po Englu, bez nepravilnosti zagrižaja i potrebe za ortodontskom terapijom. Ortodontski pacijenti su podeljeni u tri podgrupe na osnovu sagitalnih nepravilnosti zagrižaja.

Rezultati U eksperimentalnoj grupi 45,03% pacijenata pokazalo je neku formu TMD, dok je među studentima taj procenat bio 56,41%. U eksperimentalnoj grupi pacijenti sa distalnom ili mezijalnom okluzijom pokazali su viši procenat TMD u odnosu na pacijente sa I klasom. I u eksperimentalnoj i u kontrolnoj grupi najveći je bio procenat ispitanika sa blago izraženom TMD. Učestalost TMD je bila veća kod pacijenata ženskog pola u eksperimentalnoj grupi.

Zaključak Visoka učestalost TMD u kontrolnoj grupi govori u prilog njenoj jako kompleksnoj etiologiji, u kojoj stres ima značajnu ulogu. Ortodontske nepravilnosti su samo jedan od mnogih faktora koji mogu doprineti nastanku i izraženosti TMD, ali se ne mogu smatrati najvažnijim.

Ključne reči: temporomandibularna disfunkcija – TMD, temporomandibularni zglob – TMZ; malokluzija; Fonsekin upitnik; Fonsekin anamnestički indeks

UVOD

Temporomandibularna disfunkcija (TMD) predstavlja grupu poremećaja mastikatornog sistema, koji mogu biti posledica mišićnih stanja ili poremećaja temporomandibularnog zgloba (TMZ). TMD je vrlo učestalo stanje, uglavnom kod osoba starosti 20–40 godina [1]. Najčešći simptomi su bol u predelu temporomandibularnog zgloba i umor kranijalnih i facijalnih mišića, ograničeni ili nepravilni pokreti donje vilice, pomeranje diska i prisustvo zvučnih efekata u zglobu [2]. Jako se često javlja u zdravoj populaciji [3, 4]. Znaci se javljaju kod do 60–70% populacije, ali samo jedna od četiri osobe je svesna simptoma i zbog njih traži terapiju [5, 6]. Nalaz koji nema jasno objašnjenje je da među ljudima koji traže lečenje većinu čine žene, skoro četiri puta češće nego muškarci [5]. Etiologija je multifaktorijelna i kompleksna i uključuje anatomske, patofiziološke i psihosocijalne faktore. Za uspešno lečenje TMD ključno je identifikovati predisponirajuće i doprinoseće faktore i napraviti razliku između mišićnih uzroka TMD i intraartikularnih poremećaja samog zgloba [1].

Upitnici koji se bave TMD i klasifikuju pacijente u smislu stepena izraženosti kreirani su da bi se pojednostavila evaluacija u epidemiološkim studijama i standardizovali uzorci istraživanja kako bi se dobili i uporedili rezultati iz različitih studija [7, 8, 9]. Prema nedavnim studijama, Fonsekin anamnestički indeks pokazuje visoku senzitivnost u identifikaciji pacijenata koji imaju TMD, indikovan je za početni skrining pacijenata i pokazuje visoku dijagnostičku tačnost [10, 11, 12].

Cilj ove studije bio je da se proceni učestalost i izraženost TMD kod ortodontskih pacijenata i da se utvrdi da li tip malokluzije utiče na učestalost i izraženost TMD.

MATERIJAL I METOD

Studija je sprovedena na Klinici za ortopediju vilica Stomatološkog fakulteta Univerziteta u Beogradu. U studiju je bilo uključeno ukupno 210 ispitanika. Eksperimentalnu grupu činili su pacijenti koji su došli zbog želje da započnu ortodontski tretman, ali ga još nisu započeli, ukupno 171 pacijent. Kriterijumi isključenja bili su starost pacijenta (stariji od 12 godina), započeta terapija TMD i prisustvo orofacijalnog bola ili kliničkih promena. Dobili su odgovarajuća uputstva o ciljevima istraživanja pre nego što su odgovorili na Fonsekin upitnik (preveden na srpski jezik) (Slika 1). Pacijentima je objašnjeno da treba da odgovore na deset pitanja birajući samo jedan od odgovora koji ukazuju na različite stepene TMD: da (10 poena), ne (0 poena), ponekad (5 poena). Zbir bodova je korišćen za klasifikaciju učesnika u četiri kategorije: bez TMD (0 do 15 poena); blaga TMD (20 do 40), umerena TMD (45 do 60) i teška TMD (70 do 100). Prema vrsti malokluzije (klasifikacija po Englu) pacijenti su podeljeni u tri podgrupe: I klasa, mezijalna okluzija (1/2 III i III klasa) i distalna okluzija (1/2 II i II klasa). Kontrolnu grupu činilo je 39 studenata stomatologije (24–28 godina) sa okluzijom I klase, bez potrebe za ortodontskim tretmanom. Kriterijumi isključenja za kontrolnu grupu bili su ortodontski tretman u trenutku istraživanja ili u poslednje dve godine, započeta terapija TMD i prisustvo orofacijalnog bola ili kliničkih promena. Zbir bodova izračunat je za svakog pacijenta i studenta i rezultati su upoređeni među grupama i podgrupama. Hi-kvadratni test je primenjen da uporedi prisustvo i težinu TMD među grupama sa nivoom značajnosti postavljenim na 5% ($p \leq 0,05$).

REZULTATI

U eksperimentalnoj grupi 45,03% pacijenata je pokazalo prisustvo TMD, a procenat učesnika sa TMD u kontrolnoj grupi je bio nešto veći ali bez statističke značajnosti (56,41%) (Slika 2). Među ortodontskim pacijentima velika većina je pokazala blagu TMD (84,41%), a među studentima stomatologije rezultat je bio sličan – 86,36% je imalo blagu TMD prema Fonsekinom upitniku (Slika 3). Analizirajući rezultate u eksperimentalnoj grupi i uticaj malokluzija na prisustvo i težinu TMD, prisustvo TMD je bilo veće u podgrupi sa distalnom i mezijalnom okluzijom nego u grupi sa I klasom, iako razlika nije bila statistički značajna (Slika 4). Svi učesnici koji su pokazali tešku TMD imali su mezijalnu okluziju. Što se tiče pola ispitanika, prisustvo TMD je bilo nešto veće kod žena nego kod muškaraca u grupi ortodontskih pacijenata, ali razlika nije bila statistički značajna (Tabela 3). Bol tokom žvakanja primećen je kod 26,9% učesnika u eksperimentalnoj grupi (odgovori DA i PONEKAD), a u kontrolnoj grupi taj procenat je bio 10,26% (Tabela 1). Više od polovine ortodontskih pacijenata (53,03%) dalo je pozitivne odgovore (DA i PONEKAD) na pitanje da li sebe smatraju nervoznom osobom, dok je taj procenat bio znatno veći u grupi studenata stomatologije (76,93%) (Tabela 2). Glavobolje su bile prisutne kod oko trećine učesnika u obe grupe (tabele 1 i 2).

DISKUSIJA

Cilj ovog istraživanja bio je da se utvrdi da li postoji veza između malokluzija (okluzija I klase, distalna i mezijalna okluzija) i učestalosti i izraženosti TMD korišćenjem Fonsekinog anamnestičkog upitnika. Zanimljivo je to da je procenat učesnika sa TMD bio veći u grupi studenata stomatologije nego u grupi ortodontskih pacijenata. U našem istraživanju 56,41% studenata stomatologije pokazalo je neki stepen TMD. Visok procenat studenata stomatologije sa određenim stepenom poremećaja se slaže sa literaturom. Nomura i sar. [9] pronašli su sličan procenat (53,21%) studenata sa TMD. Pedroni i sar. [4] pokazali su da je TMD prisutan u 68% među studentima stomatologije, a u studiji koju su objavili Garcia et al. [3] taj procenat je bio 61% na uzorku od 200 studenata, korišćenjem istog upitnika. U istraživanju, takođe među studentima, koje su objavili Bevilaqua-Grossi i sar. [8], TMD je bio prisutan u još većem procentu (78%). Činjenica da su u našem uzorku bili samo studenti sa I klasom po Englu i bez potrebe za ortodontskim tretmanom može objasniti nešto veće procente u literaturi nego u ovoj studiji.

Nedavna studija [2] takođe je otkrila da profesionalni sportisti češće pate od TMD od onih koji se time ne bave profesionalno. Profesionalni sportisti su izloženi većem stresu, odnosno psihičkom pritisku izazvanom povećanim naporima i takmičenjima, što može dovesti do razvoja temporomandibularnih disfunkcija [2]. Slično, akademski stres ima uticaj na zdravlje studenata i prisustvo TMD, što može biti objašnjenje za visok procenat studenata sa TMD u našoj studiji, kao i mnogim drugim [13, 14, 15].

U našoj kontrolnoj grupi, analizirajući samo grupu studenata stomatologije sa TMD, 90,9% njih je odgovorilo pozitivno (DA ili PONEKAD) na pitanje broj 10 – da li se smatraju napetim/nervoznim. To sugeriše da stres i anksioznost imaju značajnu korelaciju sa TMD, što je dokazano u brojnim studijama [13, 14, 15].

Naša studija je pokazala da je mezijalna okluzija (1/2 klase III i klase III) bila prisutna u svim slučajevima izražene TMD. Ovo nije u skladu sa studijom Pedronija i sar. [4], gde su svi ispitanici sa izraženom TMD imali distalnu okluziju.

Henrikson i saradnici [16], analizirajući uzorak devojčica sa klasom I i klasom II, zaključili su da normalna okluzija ima manje predispozicija za simptome i znake TMD, dok su neke karakteristike okluzije, koje se češće nalaze u grupi malokluzije klase II, stvarale povećanu predispoziciju za simptome i znake TMD.

Svi ovi nalazi mogu sugerisati da može postojati veza između okluzalnog odnosa i TMD, iako bi broj učesnika studije trebalo da bude značajniji za takav zaključak.

Analizirajući pol ispitanika i prisustvo TMD, u eksperimentalnoj grupi TMD je bio češći kod žena nego kod muškaraca, što je u saglasnosti sa literaturom [3, 4, 7, 8, 9]. Razlog se može naći u različitim fiziološkim karakteristikama, hormonskom statusu i različitim karakteristikama vezivnog tkiva kod žena u odnosu na muškarce [5, 8, 9]. U kontrolnoj grupi ova razlika između polova nije utvrđena, što je u skladu sa studijom koju je objavio Grey sa saradnicima [17]. On je tvrdio da prevalencija znakova i simptoma TMD ne bi trebalo da bude različita kod muškaraca i žena u grupi nepacijenata.

Znaci i simptomi TMD mogu se proceniti različitim metodama. Fonsekin upitnik [8] omogućava prikupljanje velike količine informacija u relativno kratkom periodu i po niskoj ceni, lako ga je razumeti i uporediti sa drugim alatima za procenu. Pokazuje visoku dijagnostičku tačnost i indikovan je za početni skrining pacijenata sa TMD [11, 12, 13].

Rana i ispravna identifikacija mogućih etioloških faktora može pomoći u pronalaženju odgovarajućeg protokola lečenja kako bi se smanjili ili uklonili znakovi i simptomi TMD.

ZAKLJUČAK

Rezultati su pokazali da prisustvo TMD nije bilo veće u grupi pacijenata sa malokluzijama u poređenju sa grupom studenata stomatologije I klase i bez potrebe za ortodontskim lečenjem. Visoka prevalencija TMD u kontrolnoj grupi govori u prilog njegovoj složenoj etiologiji. TMD je bio češći kod pacijenata sa mezijalnom i distalnom okluzijom nego kod ortodontskih pacijenata klase I. Iako su potrebne dalje studije sa većim brojem učesnika, možemo zaključiti da je malokluzija jedan od mnogih faktora koji mogu doprineti pojavi i težini TMD, ali se ne može smatrati najznačajnijim.