The Prevalence of Malocclusion among 11–13 Years Old Children in Foča

Tanja Ivanović[1], Dragan Ivanović[1], Predrag Nikolić[2], Svjetlana Janković[1], Bojana Davidović[1], Ivana Grujičić[1]

[1]University of East Sarajevo, School of Medicine, Department of Dentistry, Foča, Bosnia and Herzegovina;
[2]University of Belgrade, Faculty of Dental Medicine, Department of Orthodontics, Belgrade, Serbia

SUMMARY

Introduction Malocclusion is common in children and it has great influence on the quality of life of patients. The aim of this study was to determine the prevalence of malocclusion among 11-13 years old children in the municipality of Foca in Republika Srpska.

Material and Methods The study included 81 respondents, 11-13 years old. It was conducted in elementary schools in the municipality of Foča. Respondents underwent clinical examination, alginate impressions of upper and lower jaws were taken and study models analyzed. To determine malocclusion (crowding, spacing, cross bite, deep bite, open bite and occlusion class as per Angle) ICON index (Index of Complexity, Outcome and Need) was used.

Results The results showed that 17.3% of respondents had spacing between teeth, 80.2% crowding, 23.4% cross bite, 29.6% deep bite while open bite was present in 2.4% of patients. Occlusion II/1 class by Angle was present in 38.3% of respondents, II/2 class in 12.3% of respondents, Class I occlusion in 40.7% of respondents and III class was found in 2.4% of respondents.

Conclusion There was high prevalence of malocclusion in the examined children. It is necessary to implement prevention programs, early treatment of dental caries, prevent premature tooth loss as well as measures of interceptive orthodontics in order to reduce frequency of malocclusion.

Keywords: malocclusion; orthodontic irregularity; index of treatment needs (ICON)

INTRODUCTION

Malocclusion considers impaired relationship of teeth within one arch as well as between teeth from opposite arches. Numerous etiological factors, both local and general, have significant impact on children's psychological and physical development and malocclusion. It affects esthetics and sometimes can compromise physical health (difficult breathing, chewing and speech). Sometimes relatively small irregularities can lead to serious consequences related to social and emotional adaptability. Due to the high prevalence of these disorders in primary, mixed and permanent dentition, malocclusion also has social-medical significance.

To assess orthodontic treatment needs and determine malocclusion characteristics, numerous occlusal indices, such as IOTN (Index of Orthodontic Treatment Need), ICON (Index of Complexity, Outcome and Need), PAR (Peer Assessment Rating) and DAI (Dental Esthetic Index), can be used [1, 2, 3]. Many countries use these indices to plan orthodontic services [4, 5, 6].

The incidence of malocclusion varies in different populations and ethnic groups and ranges from 39-93% [7]. The differences are most commonly found in sagittal relations of upper and lower dental arch and crowding [8].

Number of studies related to these orthodontic irregularities have been found in north, central and west Europe (Sweden [9], UK [10], Germany [11] and France [12]), whereas lower number of studies have been initiated in south Europe [13, 14], South East Europe, and Bosnia and Herzegovina.

Epidemiological studies of the World Health Organization conducted in Hungary showed that the prevalence of malocclusion in twelve year olds was 40.8% in 1985 and 41.3% in 1991 [6]. Research in the Eastern part of Republika Srpska showed that every other twelve year old needed some kind of orthodontic treatment [15]. On the territory of Bosnia and Herzegovina, Džemidžić et al. [16] also reported high incidence of orthodontic treatment need among 12-14 years old children.

The aim of this study was to determine the prevalence of malocclusion in 11-13 years old children in the municipality of Foca in Republika Srpska.

MATERIAL AND METHODS

The research was conducted in elementary schools in the municipality of Foča in 2011. It included 81 respondents, both genders, 11-13 years old, with no previous history

Address for correspondence: Tanja IVANOVIĆ, Stepe Stepanovića 1, 73300 Foča, Bosna i Hercegovina;
tanjadomazet@yahoo.com

Table 1. ICON index
Tabela 1. Indeks ICON

Dental esthetics Dentalna estetika	/	/	/	/	/	/
Crowding of upper teeth Teskoba u gornjem zubnom nizu	<2 mm	2.1–5 mm	5.1–9 mm	9.1–13 mm	13.1–17 mm	>17 mm
Spacing of upper teeth Rastresitost u gornjem zubnom nizu	<2 mm	2.1–5 mm	5.1–9 mm	>9 mm	/	/
Cross bite Ukršten zagrižaj	No Ne	Yes Da	/	/	/	/
Open bite Otvoren zagrižaj	0 mm	<1 mm	1.1–2 mm	2.1–4 mm	>4 mm	/
Deep bite Dubok zagrižaj	<1/3 covering of lower incisors <1/3 prekrivenosti donjeg sekutića	1/3–2/3 covering of lower incisors Prekrivenost od 1/3 do 2/3 donjeg sekutića	2/3 to complete covering of lower incisors 2/3 potpune prekrivenosti donjeg sekutića	Complete covering of lower incisors Potpuna prekrivenost donjeg sekutića	/	/
Occlusion by Angle Okluzija po Englu	Cusp-fissure Kvržica-fisura	Any but not cusp-fissure Bilo koja kuspidacija, ali ne kvržica-fisura	Cusp-cusp Kuspidacija kvržica na kvržicu	/	/	/

of orthodontic treatment. All respondents underwent clinical examination, alginate impressions were taken and study models were analyzed. The examination was performed in school dental office using daylight.

Components of ICON index [2] were used to determine malocclusion (crowding or spacing in the upper dental arch, cross bite, open bite, deep bite, occlusion class as per Angle). ICON index (Table 1) was also used to evaluate the need for orthodontic treatment. Although aesthetics represent one component of ICON index it was not considered in this study. Crowding or spacing in the upper arch were analyzed by comparing required and available space. Required space was calculated as the sum of mesio-distal widths of each tooth whereas available space was measured as space between distal surfaces of last molars on the left and right side. Cross bite represents an irregularity in the transverse direction and it was diagnosed on the study models. Open bite was found in patients who had incisal relationship of incisors (open for 1 mm, 1.1-2 mm, 2-4 mm and >4 mm). Deep bite included patients who had overbite of 1/3-2/3, > 2/3 to complete crown coverage and complete coverage of lower incisors. Classification of occlusion by Angle included class I, II or III.

Prior to examination ethical approval was obtained from the Ethical Committee of the Faculty of Medicine in Foca as well as written consents from principals and all parents.

For statistical analysis χ^2 test was used (SPSS 11.5) with the level of significance of $p<0.05$.

Table 2. Distribution of respondents by gender
Tabela 2. Učestalost polova u odnosu na uzrast ispitanika

Parameter Parametar	Age of children (years) Uzrast dece (godine)		
	11	**12**	**13**
Girls Devojčice	64.0%	53.6%	53.6%
Boys Dečaci	36.0%	46.4%	46.4%

Table 3. Distribution of malocclusions
Tabela 3. Učestalost ortodontskih nepravilnosti

Malocclusions Ortodontske nepravilnosti	Frequency (%) Učestalost (%)
Spacing Rastresitost zuba	17.3
Crowding Teskoba zuba	80.2
Cross bite Ukršten zagrižaj	23.5
Deep bite Dubok zagrižaj	29.6
Open bite Otvoreni zagrižaj	2.4
Class I I klasa	40.7
Class II/1 Klasa II/1	38.3
Class II/2 Klasa II/2	12.3
Class III Klasa III	6.2

RESULTS

The total of 81 respondents were examined (43.2% boys and 56.8% girls) (Table 2). Results of the study showed that 17.3% of children had spaced teeth. Crowding was present in 80.2% of respondents, cross bite in 23.4%, deep bite 85.2%, and open bite was present in 2.4% of patients (Table 3). The incidence of deep bite was 29.6% (cover-age of 2/3 to complete covering of lower incisors with upper incisors and complete coverage of lower incisors with upper incisors), while 85% had coverage of 1/3 to 2/3, 2/3 to complete coverage and complete coverage of lower incisors with upper incisors. Of the total of examined children II/1 class was found in 38.3% of patients, II/2 class in 12.3%, class I in 40.7%, while class III was registered in 6.2% of children (Table 3).

DISCUSSION

Most studies about the prevalence of malocclusion and need for orthodontic treatment have been carried out in twelve year olds and adolescents. This is the first epidemiological study of malocclusion based on ICON index done in Bosnia and Herzegovina. More frequent use of this index to assess need for orthodontic treatment and diagnosis of malocclusion is important for monitoring the prevalence of malocclusion and planning the appropriate preventive measures.

Results showed that the most common malocclusion was crowding (crowding less than 2 mm; from 2.1 to 5 mm and greater than 17 mm). High frequency of crowding is associated with high values of untreated caries but also other features of DMFT index which leads to premature primary teeth loss and consequent crowding. Davidović et al. [17] analyzed the average caries index (ACI) of twelve and fifteen year olds in the municipality of Foča, Kalinovik and Čajniče and they found ACI of 6.17 for all respondents and 5.64 for twelve year olds. Same authors [15] reported the existence of malocclusion in the municipalities in the Eastern part of Republika Srpska: in 12.4% of first grade students and 57.5% of sixth grade students in Foča; 12.1% of first and 55.5% of sixth grade students in Čajnice; 10.0% of first and 48.4% of sixth grade students in Višegrad and 13.9% of first and 56.8% of sixth grade students in Novo Goražde.

Results of a study done in Southern Italy (Naples) [14] using IOTN index showed that 49.5% of twelve year olds had teeth crowding which is lower percentage compared to the results of the current study. Occlusal relationship of class I was found in 59.5% of children, distal bite in 36.3%, mesial in 4.3% and cross bite in 14.2% of children. Open bite was registered in 0.7% and deep bite in 20.2% of patients, which is also lower frequency compared to the results of the current study. Souames et al. [12] using IOTN index found teeth crowding present in 28% of 9-12 years old children in France and this was slightly lower than findings in the current study. Deep bite was present in 15% of patients, unilateral cross bite in 4% of patients while bilateral cross bite was found in 4% of respondents that was also lower percentage compared to the results of the current study.

A study conducted in Bogota (Colombia) [7] showed that in the population group of children from 5-17 years, distal bite was present in 20.8% of respondents (II/1 class in 14.9%, and II/2 class in 5.9% of patients), whereas class III was observed in 3.7% that is also lower compared to the results of the present study. Deep bite was registered in 21.6% and open bite in 9% of patients. Cross bite was detected in 4.6% of the respondents, which is lower compared to the results of the current study. In the same Columbian study, the most common malocclusion was crowding that occurred in 52.1% of cases, which is less frequent compared to our study. Spacing was present in 25.9% of patients and this is higher compared to the results of our study [7].

A study from Brazil [18] showed in 9-12 years olds the most common malocclusion was crowding (45.5%)

or cross bite (19.2%), which is also lower percentage compared to the results of the current study. Open bite was registered in 10.8% of subjects, and it is in correlation with results of our study. Class I was present in 76.7% of respondents (more than in our study), class II in 19.2% and class III in 4.2% of patients which was slightly lower compared to the results of the current study.

Brito et al. [19] found crowding in 45.5% of children, which is slightly lower percentage compared to the results of our study. Cross bite had 19.2% and open bite 10.8% of children. Class I was found in 76.7% of children that is higher compared to the results of the present study, class II was found in 19.2% and class III in 4.2% of patients, which is slightly smaller percentage compared to the findings of our study.

Mugonzibwa et al. [20] evaluated the need for orthodontic treatment in Tanzania. Respondents were divided into the groups according to their age: 3-5 years; 6-8 years; 9-11 years; and 15-16 years. Results showed in the group 9-11 years that 18.9% of patients had distal occlusion while mesial occlusion was found in 1.7% of patients, which is lower than in the current study. Class I was found in 79.4% of subjects and that is higher than in our study. The most common malocclusion was cross bite (38-69%). In older age groups crowding was the second most frequent malocclusion and was detected in 26% of subjects.

CONCLUSION

Results of our study showed high prevalence of malocclusion in children in Republika Srpska. It was higher than in most European countries. This finding points to the necessity of implementation of prevention programs, early caries treatment as well as measures of interceptive orthodontics in order to reduce the incidence of malocclusion in children.

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Učestalost ortodontskih nepravilnosti kod dece uzrasta 11–13 godina u Foči

Tanja Ivanović[1], Dragan Ivanović[1], Predrag Nikolić[2], Svjetlana Janković[1], Bojana Davidović[1], Ivana Grujičić[1]

[1]Univerzitet u Istočnom Sarajevu, Medicinski fakultet, Odsek Stomatologija, Foča, Bosna i Hercegovina;
[2]Univerzitet u Beogradu, Stomatološki fakultet, Klinika za ortopediju vilice, Beograd, Srbija

KRATAK SADRŽAJ
Uvod Ortodontske nepravilnosti su različito, ali dosta često, zastupljene kod dece i u velikoj meri utiču na kvalitet života pacijenata. Cilj ovog rada je bio da se odredi učestalost ortodontskih nepravilnosti kod dece uzrasta 11–13 godina na području opštine Foča u Republici Srpskoj.
Materijal i metode rada U studiji je učestvovao 81 ispitanik uzrasta od 11 do 13 godina. Studija je obavljena u osnovnim školama na teritoriji opštine Foča. Ispitanicima je urađen klinički pregled, uzeti su otisci zuba u alginatu, napravljeni i analizirani studijski modeli. U određivanju ortodontskih nepravilnosti (teskoba, rastresitost, ukršten zagrižaj, dubok zagrižaj, otvoren zagrižaj i okluzija po Englu) korišćen je indeks ICON (engl. *index of complexity, outcome and need*).
Rezultati Rastresitost zuba je ustanovljena kod 17,3% ispitanika, teskoba zuba kod 80,2% dece, ukršten zagrižaj kod 23,4%, dubok zagrižaj kod 29,6%, dok je otvoren zagrižaj zabeležen kod 2,4% ispitanika. Okluzija klase II/1 po Englu utvrđena je kod 38,3% ispitanika, klase II/2 kod 12,3%, klase I kod 40,7%, a klase III kod 2,4% dece.
Zaključak Uočena je visoka prevalencija ortodontskih nepravilnosti kod pregledane dece. Ovakav nalaz ukazuje na neophodnost primene preventivnih programa, ranu terapiju karijesa, sprečavanje prevremenog gubitka zuba i mere interceptivne ortodoncije, kako bi se smanjila učestalost ortodontskih nepravilnosti.
Ključne reči: malokluzija; ortodontska nepravilnost; indeks potrebe tretmana (ICON)

UVOD

Malokluzija je stanje poremećenog odnosa zuba unutar jednog viličnog luka, odnosno prema zubima suprotnog luka. Ove ortodontske anomalije nastaju kao posledica brojnih etioloških faktora, kako lokalnih, tako i opštih, i značajno utiču na psihički i telesni razvoj deteta. Malokluzije utiču na estetski disbalans i često dovode do stanja koja mogu da ugroze i fizičko zdravlje dece, kao što su poremećeno disanje, žvakanje i govor. Ponekad i relativno male nepravilnosti mogu dovesti do teških posledica u vezi sa socijalnim i emocionalnim prilagođavanjem. Socijalnomedicinski značaj ortodontskih nepravilnosti povezan je s velikom rasprostranjenošću ovih poremećaja u mlečnoj, mešovitoj i stalnoj denticiji.

U proceni potrebe za ortodontskim lečenjem i određivanju malokluzionih odlika koriste se brojni okluzalni indeksi, kao što su: IOTN (engl. *index of orthodontic treatment need*), ICON (engl. *index of complexity, outcome and need*), PAR (engl. *peer rating assessment*) i DAI (engl. *dental esthetic index*) [1, 2, 3]. U mnogim državama ovi indeksi se koriste za planiranje ortodontskih usluga [4, 5, 6].

Učestalost okluzalnih anomalija varira u različitim populacijama i etničkim grupama, a kreće se u rasponu od 39% do 93% [7]. Razlike su naročito izražene u sagitalnom odnosu dentalnog luka i teskobi [8]. U Severnoj, Centralnoj i Zapadnoj Evropi urađena su brojna istraživanja o ovom problemu (Švedska [9], Britanija [10], Nemačka [11] i Francuska [12]), dok je studija na tu temu u zemljama južne Evrope [13, 14] i jugoistočne Evrope, kao što je Bosna i Hercegovina (BiH), znatno manje.

Epidemiološke studije Svetske zdravstvene organizacije izvedene u Mađarskoj pokazale su da je prevalencija malokluzalnih poremećaja kod dvanaestogodišnjaka 1985. godine bila 40,8%, a 1991. godine 41,3% [6]. Istraživanja u istočnom delu Republike Srpske su pokazala da je svakog drugog dvanaestogodišnjaka potrebno podvrgnuti ortodontskom lečenju [15]. Na području BiH, Džemidžićeva i saradnici [16] su takođe ukazali na visoku potrebu za ortodontskim lečenjem dece uzrasta 12–14 godina.

Cilj ovog rada je bio da se odredi učestalost ortodontskih anomalija kod dece uzrasta 11–13 godina na području opštine Foča u Republici Srpskoj (BiH).

MATERIJAL I METODE RADA

Istraživanje je obavljeno u osnovnim školama na teritoriji opštine Foča. U studiji je učestvovao 81 ispitanik oba pola, uzrasta od 11 do 13 godina, koji ranije nije ortodontski lečen. Istraživanje je realizovano tokom 2011. godine. Kod svih pacijenata je urađen klinički pregled zuba, uzeti su otisci zuba u alginatu i napravljeni i analizirani studijski modeli. Pregled je urađen u školskoj ambulanti pod dnevnim svetlom, a za uzimanje otiska korišćeni su alginat i ortodontske kašike.

Komponente indeksa ICON su korišćene za određivanje ortodontskih nepravilnosti: teskobe u gornjem zubnom nizu, rastresitosti u gornjem zubnom nizu, ukrštenog zagrižaja, otvorenog zagrižaja, dubokog zagrižaja i okluzije po Englu (*Angle*) [2]. Ovaj indeks se koristi u proceni potreba za ortodontskim lečenjem, a uključuje ortodontske nepravilnosti kojima se dodeljuju bodovi (Tabela 1). Iako je dentalna estetika komponenta ICON, ona u proceni malokluzionih obeležja ovde nije uzimana u obzir. Teskoba, odnosno rastresitost u gornjem zubnom nizu su analizirane poređenjem potrebnog i raspoloživog prostora. Potreban prostor predstavlja zbir meziodistalnih širina krunica svih zuba, a raspoloživi prostor se ocenjuje mezijalno od poslednjeg izniklog molara s obe strane gornjeg modela. Ukršteni zagrižaj je nepravilnost transverzalnog pravca i on se takođe dijagnostikuje analizom studijskog modela. Otvoreni zagrižaj je podrazumevao incizalni odnos sekutića (otvorenost 1 mm, 1,1–2 mm, 2–4 mm i ≥4 mm). Dubok zagrižaj je označavao prekrivenost donjeg sekutića od 1/3 do 2/3 gornjim sekutićem, prekrivenost od 2/3 do potpune prekrivenosti i potpunu prekrivenost donjeg sekutića

gornjim sekutićem. Okluzija prema Englu je podrazumevala okluzalni odnos, tj. postojanje I, II ili III klase, pa su i studijski modeli analizirani prema ovom kriterijumu.

Istraživanje je odobrio Etički komitet Medicinskog fakulteta u Foči, a dobijena je i pisana saglasnost direktora škole i roditelja za izvođenje studije.

Statistički podaci su obrađeni u programu SPSS 11.5. Korišćen je χ^2-test sa nivoom značajnosti p<0,05.

REZULTATI

Od 81 ispitanika koji je učestvovao u istraživanju, 43,2% su činili dečaci, a 56,8% devojčice (Tabela 2).

Rastresitost zuba je ustanovljena kod 17,3% dece, teskoba kod 80,2% ispitanika, ukršteni zagrižaj kod 23,4%, duboki zagrižaj kod 85,2%, a otvoreni zagrižaj kod 2,4% ispitanika (Tabela 3). Učestalost dubokog zagrižaja je bila 29,6% (prekrivenost od 2/3 do potpune prekrivenosti donjeg sekutića gornjim sekutićem i potpuna prekrivenost donjeg sekutića gornjim sekutićem), dok je kod 85,0% ispitanika zabeležena prekrivenost od 1/3 do 2/3 donjeg sekutića gornjim sekutićem, prekrivenost od 2/3 do potpune prekrivenosti i potpuna prekrivenost donjeg sekutića gornjim sekutićem. Od ukupnog broja pregledane dece klasa II/1 je utvrđena kod 38,3% ispitanika, klasa II/2 kod 12,3%, klasa I kod 40,7%, dok je III klasa zabeležena kod 6,2% dece (Tabela 3).

DISKUSIJA

Najviše studija o prevalenciji malokluzije i potrebi za ortodontskim lečenjem rađeno je kod dvanaestogodišnjaka i adolescenata. Ovo je prvo epidemiološko istraživanje malokluzije na osnovu indeksa ICON na području BiH. Sve češće korišćenje indeksa, kako za procenjivanje potrebe za ortodontskim lečenjem, tako i za dijagnostikovanje ortodontskih nepravilnosti, od velike je važnosti za praćenje prevalencije malokluzija i planiranje odgovarajućih mera prevencije.

Rezultati analize su pokazali da je najčešća ortodontska nepravilnost teskoba zuba (teskoba manja od 2 mm; 2,1–5 mm i veća od 17 mm). Velika učestalost teskobe zuba dovodi se u vezu s visokim vrednostima nesaniranog karijesa, ali i svih drugih obeležja indeksa KEP, što dovodi do preranog gubitka mlečnih zuba i pojave teskobe. Davidović i saradnici [17] su analizirali KIp kod dvanaestogodišnjaka i petnaestogodišnjaka u opštinama Foča, Kalinovik i Čajniče, i njihovi rezultati su pokazali da je prosečna vrednost KIp za sve ispitanike 6,17, a kod dvanaestogodišnjaka 5,64. Davidović i saradnici [15] su takođe radili istraživanje u opštinama istočnog dela Republike Srpske, a rezultati su ukazali na postojanje ortodontskih nepravilnosti kod 12,4% učenika prvog razreda i 57,5% učenika šestog razreda u Foči, kod 12,1% učenika prvog i 55,5% učenika šestog razreda u Čajniču, kod 10,0% učenika prvog i 48,4% učenika šestog razreda u Višegradu, odnosno kod 13,9% učenika prvog i 56,8% učenika šestog razreda u Novom Goraždu.

Rezultati istraživanja u južnoj Italiji (Napulj) [14] primenom indeksa IOTN pokazali su da je 49,5% dvanaestogodišnjaka imalo teskobu zuba, što je manje u poređenju s rezultatima naše studije. Okluzalni odnos I klase je utvrđen kod 59,5% dece, dis-

talni zagrižaj kod 36,3%, mezijalni kod 4,3%, a ukršteni zagrižaj kod 14,2% ispitanika. Otvoreni zagrižaj je zabeležen kod 0,7% pacijenata, a duboki zagrižaj kod 20,2%, što je takođe manje u poređenju s rezultatima našeg istraživanja. Suam (*Souames*) i saradnici [12] su u Francuskoj, primenom indeksa IOTN, ustanovili teskobu zuba kod 28% ispitanika uzrasta 9–12 godina, što je nešto manje nego u nalazima naše studije. Duboki zagrižaj je zabeležen kod 15% ispitanika, dok su unilateralni i bilateralni ukršteni zagrižaj utvrđeni kod po 4% ispitanika, što je takođe manji procenat u poređenju s nalazima našeg istraživanja.

Rezultati istraživanja u Bogoti (Kolumbija) [7] pokazali su sledeće: u grupi dece uzrasta od pet do 17 godina distalni zagrižaj je zabeležen kod 20,8% ispitanika (II/1 klasa 14,9%, a II/2 klasa kod 5,9%), a okluzija III klase kod 3,7% dece, što je takođe manje u poređenju s nalazima naše studije. Duboki zagrižaj je zabeležen kod 21,6% ispitanika, a otvoreni zagrižaj kod 9%. Ukršteni zagrižaj je ustanovljen kod 4,6% ispitanika, što je manje u odnosu na rezultate naše studije. I u ovoj studiji je teskoba zuba bila najčešća okluzalna anomalija, zabeležena kod 52,1% ispitanika, što je manje u poređenju s našim rezultatima. Rastresitost zuba je utvrđena kod 25,9% dece, što je rezultat veći u odnosu na onaj dobijen u našoj studiji.

Istraživanje urađeno u Brazilu [18] pokazalo je da je u grupi dece uzrasta 9–12 godina najčešća ortodontska nepravilnost bila teskoba zuba (45,5% ispitanika), odnosno ukršteni zagrižaj (19,2% ispitanika), što je takođe manje u poređenju s rezultatima naše studije. Otvoreni zagrižaj je zabeležen kod 10,8% dece, što je nešto više u odnosu na naše nalaze. I klasa po Englu je ustanovljena kod 76,7% ispitanika (više u odnosu na rezultate naše studije), II klasa kod 19,2%, a III klasa kod 4,2%, što je nešto manje u poređenju s našim nalazima.

U grupi ispitanika uzrasta od devet do 12 godina Brito (*Brito*) i saradnici [19] su ustanovili teskobu zuba kod 45,5% dece, što je nešto manje u poređenju s rezultatima naše studije. Ukršteni zagrižaj je zabeležen kod 19,2% dece, a otvoreni zagrižaj kod 10,8%. I klasa je utvrđena kod 76,7% ispitanika, što je nešto više u poređenju s rezultatima naše studije, II klasa je zabeležena kod 19,2%, a III klasa kod 4,2% ispitanika, što je nešto manji procenat nego što je nalaz naše studije.

Mugonzibva (*Mugonzibwa*) i saradnici [20] su procenjivali potrebu za ortodontskim lečenjem kod dece u Tanzaniji. Ispitanici su svrstani u četiri uzrasne grupe: 3–5 godina, 6–8 godina, 9–11 godina i 15–16 godina. Rezultati su pokazali sledeće: u grupi pacijenata uzrasta 9–11 godina 18,9% je imalo distalnu okluziju, dok je mezijalna okluzija zabeležena kod 1,7% ispitanika, što je manje u odnosu na rezultate naše studije. I klasa je uočena kod 79,4% dece, što je nešto više u odnosu na nalaze naše studije. Najčešća malokluziona osobina bio je ukršteni zagrižaj, koji je ustanovljen kod 38–69% dece. U starijim starosnim grupama teskoba zuba je bila druga po učestalosti ortodontska nepravilnost, a uočena je kod 26% ispitanika.

ZAKLJUČAK

Rezultati istraživanja pokazuju visoku prevalenciju ortodontskih nepravilnosti, a učestalost je veća nego u većini zemalja Evrope. Ovakav nalaz upućuje na neophodnost primene programa prevencije, ranu terapiju karijesa i mere interceptivne ortodoncije, kako bi se smanjila učestalost malokluzija kod dece.