

Tomislav Škrinjarić, Ivana Čuković-Bagić, Kristina Gorseta, Željko Verzak and Ilija Škrinjarić

Socijalno-ekonomski status i ponavljanje dentalnih trauma kod djece

Socioeconomic Status and Dental Injury Repetition in Children

Zavod za dječju i preventivnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu
Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Croatia

Sažetak

Neka djeca češće su pogođena traumama zuba od ostalih. Visoka prevalencija zapažena je kod dječaka i djevojčica iz obitelji s niskim socijalno-ekonomskim statusom (SES). **Svrha** U ovom se istraživanju željelo istražiti razlikuje li se SES djece s ponovljenim ozljedama od onoga dječaka i djevojčica s jednom ozljedom. Cilj je također bio ustanoviti je li nizak SES rizični čimbenik za ponavljanje ozljeda kod djece s traumama zuba. **Materijal i metode** Istraživanje je provedeno na uzorku od 151 djeteta u dobi od 6 do 17 godina (99 dječaka i 52 djevojčice) liječenih zbog traumatskih ozljeda zuba. Njihov socijalni status procijenjen je Hollingsheadovim dvofaktorskim indeksom socijalnog položaja. Svi ispitanici razvrstani su u tri socijalna razreda – gornji, srednji i donji. Skupine su uspoređene primjenom Studentova t-testa i χ^2 testa. Primijenjeni su također Pearsonovi koeficijenti korelacija i omjeri izgleda (OR) za procjenu povezanosti SES-a s ponovljenim ozljedama. **Rezultati** Većina djece s ponovljenim ozljedama potjecala je iz donjega socijalnog razreda, pokazujući prosječnu vrijednost indeksa socijalnog položaja (ISP) od 42,89 u usporedbi s ispitanicima s jednom ozljedom kod kojih je taj indeks bio 38,5 ($p = 0,018$). Pacijenti iz donjega socijalnog razreda imali su 1,54 puta veći rizik za ponavljanje ozljeda od onih iz gornjega socijalnog razreda (OR = 1,542; CI = 0,564 – 4,214). **Zaključak** Djeca s ponovljenim ozljedama značajno se razlikuju od djece s jednom ozljedom, kad se uzmu u obzir ISP i SES. Dakle, ako dijete pripada donjem socijalnom razredu ima povećani rizik od ponavljanja ozljeda.

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Dr. Tomislav Škrinjarić
Sveučilište u Zagrebu
Stomatološki fakultet
Zavod za dječju i preventivnu
stomatologiju
Gundulićeva 5, Zagreb
tel: 01 4802 111
e-adresa:tskrinjari@sfzg.hr

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Uvod

Traumatske ozljede zuba česte su i ozbiljan su javnozdravstveni problem u djetinjstvu (1, 2). Nastaju kao rezultat složene interakcije djeteta s njegovim fizičkim okolišem i socijalnom okolinom (3). Uzroci ozljeđivanja zuba kompleksni su, te s povećanim rizikom od ozljeda može biti povezan niz psihosocijalnih čimbenika (3 – 5). Epidemiološki model *domaćin – sredstvo – okoliš* prihvaćen je kao najprikladniji za istraživanje ozljeđivanja (6). *Domaćin* ili ozljeđeno dijete može se analizirati na temelju dobi, spola, razvojnih obilježja i ponašanja. *Sredstvo* se definira kao energija ili predmet koji uzrokuje ozljedu. *Okoliš* nije samo fizički, nego uključuje i psihosocijalnu okolinu u kojoj su sve komponente modela u interakciji te djeluju tako da dovode do ozljede. Guyer i Gallagher (6) ističu da se napredak u sprječavanju ozljeda može postići preventivnim djelovanjem na razini bilo koje komponente u tom modelu.

Epidemiološka istraživanja pokazuju da otprilike trećina predškolske djece i četvrtina školaraca doživi neki oblik ozljede zuba (4). No, sva djeca nisu jednako pogođena dentalnim traumama. Dokazano je da neka imaju veći rizik od drugih. Neki pacijenti samo se jedanput ozlijede tijekom školske dobi, a drugi i nekoliko puta ozlijede zub ili neki drugi dio tijela.

Introduction

Traumatic dental injuries (TDI) are widespread and represent a serious dental public health problem in childhood (1, 2). Injury results from a complex interaction of the child with her/his physical and social environment (3). The causes of dental injuries are complex and a range of psychosocial factors could be associated with increased risk for injury (3-5). The epidemiological model "host – agent – environment" has been recognized as the most suitable for injury studying (6). The "host" or an injured child can be analysed by her/his age, sex, development, and behavioural characteristics. The "agent" is defined as energy or an object that causes an injury. The "environment" includes not only the physical, but also the psychosocial environment in which all components are interacting in critical manner to cause the injury. Guyer and Gallagher (6) pointed out that progress in injury prevention could be accomplished by preventive acting at the any component of this model.

Epidemiological studies show that about one third of preschool children and one fourth of all school children suffer some kind of TDI (4). All children are not equally affected by dental trauma. There is evidence that some children are at higher risk for injuries than others. Some patients

Identificirani su mnogobrojni čimbenici koji povećavaju rizik od dentalnih trauma, kao što su spol, dob, socijalno-ekonomski status te neka obilježja djeteta i obitelji (5, 7).

U dosadašnjim istraživanjima ističe se da su opće i dentalne ozljede kod djece povezane sa specifičnim rizičnim čimbenicima kao što su spol, veličina prijklopa inciziva, način pokrivenosti zuba usnom, socijalno-ekonomski status, okolišni i okolinski čimbenici, opće zdravstveno stanje, djetetovo ponašanje te neke karakteristike obitelji (8, 9). Suvremeni pogled na etiologiju traumatskih ozljeda zuba uključuje oralne, okolišne i ljudske čimbenike (4).

Rizični čimbenici koji su povezani s ozljedama djece uključuju obilježja *domaćina* kao što su djetetova dob, spol i ponašanje. Velik utjecaj ima i psihosocijalna okolina (obilježja obitelji, socijalno-ekonomski status, obilježja roditelja, zajednice i susjedstva u kojem dijete živi). Ozljede kod djece nastaju kao rezultat kompleksne interakcije obilježja djeteta i socijalno-demografskih čimbenika. Tako su osobni i obiteljski rizični čimbenici vrlo važni u etiologiji ozljeda (10).

Razmjerno je malo epidemioloških istraživanja u kojima se analizira prevalencija dentalnih ozljeda kod djece iz socijalno-ekonomski depriviranih obitelji. Uglavnom se ističe da su traumatske ozljede zuba mnogo češće ako djeca potječu iz socijalno-ekonomski ugroženih obitelji, što predstavlja ozbiljan javnozdravstveni problem (2). Bendo i suradnici (11) smatraju da fizički okoliš manje utječe na takve traumatske ozljede negoli socijalna okolina.

Breme ozljeda nije jednako raspoređeno među svim populacijskim skupinama djece. Naime, posebno se povezuje s osobama iz donjega socijalno-ekonomskog razreda (12). Tako su ustanovljene i češće opće ozljede djece koja potječu iz nižih socijalno-ekonomskih skupina (13 – 16). Samo se u nekim istraživanja autori bave povezanošću socijalno-ekonomskog statusa i prevalencije dentalnih ozljeda. U nekoliko njih dobiveni su posve suprotni rezultati (11, 17).

Utjecaj socijalno-ekonomskog statusa (SES) na traumatske ozljede kod djece ostaje nejasan. U nekim istraživanjima istaknuta je veća zastupljenost traumatskih ozljeda zuba kod djece iz obitelji s višim SES-om (18, 19). Ipak, u većini studija dokazana je povezanost nižeg SES-a i povećane prevalencije ozljeda zuba (2, 9, 20 – 23). U jednom od najnovijih istraživanja kaže se da postoji značajna povezanost između težih oblika dentalnih trauma i niskog SES-a (23).

Pitanje ponavljanja ozljeda važan je aspekt u istraživanju ozljeđivanja jer kod nekih osoba upućuje na povećanu vulnerabilnost i rizik od ozljeda. Češće ozljeđivanje može se pripisati genskoj ili stečenoj osjetljivosti zbog specifičnih obilježja *domaćina*, načina života i djetetova ponašanja (24).

Svrha ovog istraživanja jest analizirati povezanost ponavljanja ozljeda sa socijalno-ekonomskim položajem djeteta s traumom zuba, te istražiti razlikuje li se značajno SES djeteta s ponovljenom ozljedom od onoga u uzorku djece i adolescenata s jednom ozljedom.

display only a single injury during school time, while others suffer from repeated injuries to the teeth or other body areas. A number of factors have been identified to increase risk for dental injuries such as gender, age, socioeconomic status, and some child and family characteristics (5, 7).

Previous studies established that general and dental injuries in children are related to specific risk factors as sex of the child, size of incisal overjet, type of lip coverage, socioeconomic status, environmental factors, child general health, behavioural characteristics of child, and some family characteristics (8, 9). The current view on the aetiology of TDIs includes oral, environmental, and human factors (4).

Risk factors that are associated with injuries in children include „host“ characteristics such as child's age, gender, and behavioural characteristics. The child's psychosocial environment (family characteristics, socioeconomic status, parental characteristics, community and neighbourhood factors) has an important influence. Childhood injuries result from a complex interaction of child-related and sociodemographic factors. Therefore, both individual and family risk factors play important role in the aetiology of injuries (10).

There are a relatively small number of epidemiological studies related to the prevalence of dental injuries in children from socio-economically deprived families. It was suggested that traumatic dental injuries are much more prevalent in children from deprived families and they represent a serious dental public health problem (2). Bendo et al. (11) consider that physical environment has less effect on TDIs in children than the social environment.

The burden of injuries in children is not evenly distributed among all population groups. It particularly relates to those coming from lower socio-economic classes (12). More frequent general accidents were established among children coming from lower socio-economic groups (13 - 16). Only a small number of studies correlate socio-economic status and prevalence of dental injuries. In a few of such studies the obtained results are conflicting (11, 17).

The influence of socio-economic status (SES) on TDI occurrence remains unclear. Some studies have shown higher frequency of TDI in children coming from higher SES families (18, 19). However, more studies demonstrated association of lower SES and increased prevalence of TDI (2, 9, 20 - 23). The most recent study showed significant association between severe dental injuries and SES (23).

The issue of injury repetition represents an important aspect of injury research because it indicates an increased vulnerability and risk for injuries in some individuals. Vulnerability could be related to genetic or acquired susceptibility due to host characteristics, lifestyle, and child behaviours (24).

The intention of this study is to correlate the issue of injury repetition to socio-economic position of children with TDI. The aim of our study is to investigate whether the SES of injury repeaters significantly differs from that with single injury in a sample of children and adolescents.

Materijal i postupci

Ispitanici

Ovo je istraživanje provedeno na slučajnom uzorku školske djece i adolescenata s jednom ili više ozljeda. Klinički uzorak obuhvaćao je 151 ispitanika (99 dječaka i 52 djevojčice) u dobi od 6 do 17 godina liječenih u Zavodu za dječju stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu (tablica 1.). Podaci o traumama zuba i obiteljskim obilježjima prikupljeni su iz traumatskih kartona pacijenata i s pomoću upitnika. Pacijenti su podijeljeni u dvije skupine:

1. skupina s jednom ozljedom i
2. skupina s ponovljenom ozljedom ili višestrukim ozljedama.

Djeca s ponovljenim ozljedama definirana su kao pacijenti koji su doživjeli više od jedne ozljede zuba ili drugih dijelova tijela koje su zahtijevale liječenje.

Procjena socijalnog statusa

Socijalni status djece s ozljedama zuba procijenjen je Hollingsheadovim dvofaktorskim indeksom socijalnog položaja (25). To je objektivno mjerenje socijalnog statusa temeljeno na najvišoj razini formalnog obrazovanja i zanimanja. Razina obrazovanja i položaj na poslu označeni su vrijednostima od 1 do 7 i pomnoženi s težinskim skorovima 7 za zanimanje i 4 za obrazovanje. Dobivene vrijednosti zbrojene su kako bi se dobio *socijalni indeks* ili *indeks socijalnog položaja* (ISP) (25, 26). Na temelju tih vrijednosti (ISP-a) svi su ispitanici razvrstani u tri *socijalna razreda*:

1. gornji (ISP: 11 – 27),
2. srednji (ISP: 28 – 43),
3. donji (ISP: 44 – 77).

Takvo razvrstavanje omogućilo je usporedbu ponavljanja ozljeda između socijalnih razreda.

Statističke analize

Usporedba socijalnih razreda obavljena je primjenom Studentova t-testa, F-testa i χ^2 -testa. Analiza Pearsonovih korelacija primijenjena je za utvrđivanje povezanosti između ponavljanja ozljeda, SES-a i djetetovih obilježja. Za procjenu utjecaja SES-a na ponavljanje ozljeda korišteni su omjeri izgleda (OR) s 95-postotnim intervalom pouzdanosti (CI). Statističke analize obavljene su statističkim paketom SPSS 11.0 (SPSS, Inc., Chicago, IL), a razina značajnosti određena je kod $P < 0,05$.

Rezultati

Dob ispitanika bila je između 6 i 17 godina (tablica 1.). Dječaci su imali višu prosječnu dob (10,3 godine) od djevojčica (9,3 godina). Vrijednosti dobivenih indeksa socijalnog položaja (ISP) bile su distribuirane približno normalno (slika 1.).

Razlike u indeksu socijalnog položaja (ISP-a) između pacijenata s ponovljenim ozljedama i onih s jednom ozljedom bile su značajne (tablica 2.). Djeca s ponovljenim ozljedama imala su značajno više vrijednosti ISP-a (42,89) u usporedbi s ispitanicima s jednom ozljedom (38,5) ($t = 2,388$; $p = 0,018$). Treba istaknuti da više vrijednosti ISP-a označavaju niži socijalni položaj ili niži SES. Dobiveni rezultati pokazu-

Materials and Methods

Subjects

This study was based on a random sample of school children and adolescents who suffered one or more injury episodes. The clinical sample comprised 151 children who (99 males and 52 females) aged from 6 to 17 years who were treated at the Department of Paediatric Dentistry, School of Dental Medicine University of Zagreb, Croatia (Table 1). Information on dental trauma and family characteristics were collected from dental trauma records and by questionnaire. Patients were classified into two groups: 1. the group with single injury (SI) or one trauma episode, and 2. group with injury repetition (IR) or multiple trauma episodes. Injury repeaters were defined as patients sustaining more than one injury of teeth or other body areas of medical attention.

Social Status Assessment

Social status of children with TDI was assessed by means of the Hollingshead Two-Factor Index of Social Position (25). This is an objective measure of social status based on the highest level of formal education and occupation. Education level and job position were assigned numeric values ranged from 1 to 7, and multiplied with weighted scores 7 and 4 for occupation and education, respectively. The obtained values were combined to obtain a „social index“ or „index of social position“ (ISP) (25, 26). Based on the ISP values, all subjects were categorized into three „social classes“: 1. upper social class (ISP: 11 – 27), 2. middle social class (ISP: 28 – 43), and 3. lower social class (ISP: 44 – 77). Such categorization of subjects enables comparison of injury repetition among the social classes.

Statistical Analyses

Comparison between social class categories was made by using Student's t test, F test, and chi-square test. Pearson correlation analyses were performed to examine associations between injury repetition, SES and child's characteristics. Odds ratios (OR) with 95% confidence intervals (CIs) were used to estimate effect of SES on injury repetition. Statistical analyses were done using SPSS 11.0 (SPSS, Inc., Chicago, IL), and a significance level was determined at $P < 0.05$.

Results

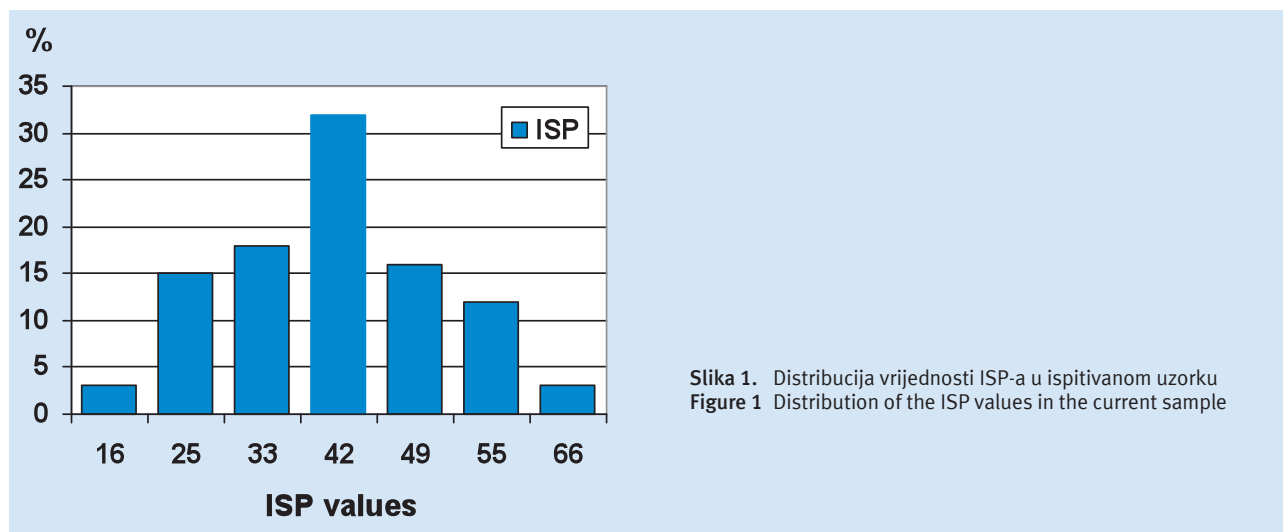
The age of the patients studied ranged from 6 to 17 years (Table 1). Males displayed higher average age (10.3 years) than females (9.3 years). The values of obtained index of social position (ISP) were distributed approximately normally (Figure 1).

Difference in the index of social position (ISP) between patients with injury repetition (IR) and single injury (SI) were significant (Table 2). Injury repeaters displayed significantly higher ISP value (42.89) comparing to subjects with SI (38.5) ($t = 2.388$; $p = 0.018$). It should be noted that higher values of ISP denote lower social position or lower SES.

Tablica 1. Struktura uzorka
Table 1 Structure of the sample

Spol • Gender	Dob • Age in years			Raspon • Range	
	N	M	s. d.	Min.	Max.
Muški • Males	99	10.3	2.69	7	17
Ženski • Females	52	9.3	3.08	6	17
Ukupno • Total	151	9.9	2.86	6	17
			$t = 2.064$; d.f. = 149	$p = 0.041$ *	

Legenda • Legend: N – broj ispitanika • number of subjects; M – aritmetička sredina • mean; s.d. – standardna devijacija • standard deviation; d.f. = stupnjevi slobode • degrees of freedom, * $P < 0,05$



Slika 1. Distribucija vrijednosti ISP-a u ispitivanom uzorku
Figure 1 Distribution of the ISP values in the current sample

Tablica 2. Razlike u indeksu socijalnog položaja (ISP) između ispitanika s ponovljenim ozljedama i onih s jednom ozljedom
Table 2 Difference in the index of social position (ISP) between patients with injury repetition (IR) and single injury (SI)

Ponavljanje ozljeda • Injury repetition	Vrijednosti ISP-a • ISP values			t - test		
	N	X	s.d.	t	d.f.	P
Da • Yes	68	42.890	11.027	2.388	149	0.018 **
Ne • No	83	38.500	11.403			
Ukupno • Total	151	40.477	11.410			

Legenda • Legend: N – broj ispitanika • number of patients; X – aritmetička sredina • mean; s.d. – standardna devijacija • standard deviation; d.f. – stupnjevi slobode • degrees of freedom; ** $P < 0.02$

ju da su djeca s ponovljenim ozljedama uglavnom iz donjega socijalnog razreda.

Nakon što su ispitanici razvrstani u socijalne razrede, prema dobivenim vrijednostima ISP-a moglo se zaključiti da većina djece s ponovljenim ozljedama potječe iz donjega socijalnog razreda (54,4 %), a samo njih 11,8 posto iz gornjega socijalnog razreda (tablica 3.). Kad su ispitanici razvrstani u tri socijalna razreda na temelju indeksa socijalnog položaja, vidjelo se da je 54,4 posto djece s ponovljenim ozljedama iz donjeg razreda, 38,3 posto iz srednjeg i 11,8 posto gornjeg. Najviša frekvencija ponovljenih ozljeda bila je u donjem socijalnom razredu, ali razlika u frekvenciji između donjeg i srednjeg razreda nije bila velika. Izračunavanje omjera mogućnosti/izgleda ponovnih ozljeda pokazalo je da pacijenti iz donjega socijalnog razreda imaju 1,54 puta veći rizik negoli oni iz gornjega (OR = 1,542; CI = 0,564-4,214).

Mnogo više djece s ozljedama potjecalo je iz donjeg, negoli iz gornjeg socijalnog razreda (slika 2.). Može se zaključiti

The obtained results show that injury repeaters are coming from lower social class.

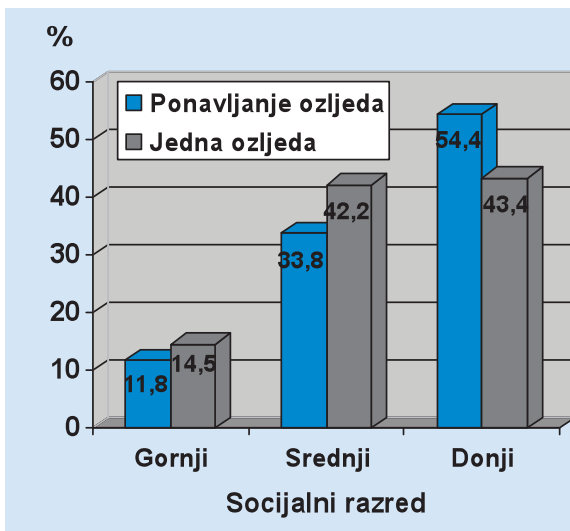
After grouping patients in social classes according to the obtained values of ISP it was possible to observe that majority of injury repeaters belonged to the lower social class (54.4%) while only 11.8 % of injury repeaters were from the upper social class (Table 3). When subjects were categorized into three social classes based on their index of social position, 54.4%, 38.3%, and 11.8% of injury repeaters were in the “lower,” “middle,” and “upper” classes. The highest frequency of injury repeaters was observed in the lower social class, but the difference in frequency of injury repeaters between the lower and middle social classes was not significant. Calculation of odds ratio showed that patients from lower social class have 1.54 times higher risk for injury repetition than those from upper social class (OR = 1.542; CI = 0.564-4.214).

There were much more children with injuries belonging to the lower social class than to the upper class (Figure 2). It

Tablica 3. Razlike u razredima socijalno-ekonomskog statusa (SES) između ispitanika s ponovljenim ozljedama i onih jednom ozljedom
Table 3 Differences in SES classes between patients with injury repetition (IR) and single injury (SI)

RAZRED SES-a • SES CLASS	Ponavljanje ozljeda • Injury repetition				Ukupno • Total	
	DA • YES		NE • NO			
	n	%	n	%	n	%
1. Gornji razred • Upper class (ISP: 18 – 27)	8	11.8	12	14.5	20	13.2
2. Srednji razred • Middle class (ISP: 28 – 43)	23	33.8	35	42.2	58	38.4
3. Donji razred • Lower class (ISP: 44 – 70)	37	54.4	36	43.4	73	48.3
Ukupno • Total	68	100.0	83	100.0	151	100.0
OR (donji • lower : gornji razred • upper class)	OR = 1.542		95% CI = 0.564 – 4.214			

Legenda • Legend: n – broj ispitanika • number of subjects



Slika 2. Ponavljanje trauma i socijalni razredi ispitanika
Figure 2 Injury repetition and social classes in subjects

Tablica 4. Razlike u razini obrazovanja roditelja ispitanika s ponovljenim ozljeda i onih s jednom ozljedom
Table 4 Differences in parental level of education between patients with injury repetition (IR) and single injury (SI)

RODITELJ • PARENT	Ponavljanje ozljede djeteta • Injury repetition in child	Podaci o obrazovanju ^a • Parental level of education ^a			t - test		
		N	M	s.d.	F	d.f.	P
Majka • Mother	DA • YES	68	4.18	1.09	2.227	1	0.138
	NE • NO	83	4.42	1.12			
Otac • Father	DA • YES	68	4.04	1.00	7.274	1	0.008 ***
	NE • NO	83	4.51	1.06			

Legenda • Legend: N – broj ispitanika • number of subjects; M – aritmetička sredina • mean; s.d. – standardna devijacija • standard deviation; d.f. – stupnjevi slobode • degrees of freedom; *** P < 0.01

^a Podaci o obrazovanju roditelja prikazani su kao aritmetičke sredine numeričkog prikaza stupnja obrazovanja vrjednovanog u rasponu od 1 do 6 – vrijednost 1 označava najnižu razinu obrazovanja ili nepotpunu osnovnu školu, a 6 najvišu razinu obrazovanja ili završen fakultet. • Data on parental education are presented as a mean of numerical values representing parental level of education ranging from 1 to 6 (where value 1 represents the lowest level of education or incomplete elementary school, and 6 denote the highest level of education or completed university). Higher average value corresponds to higher level of education.

ti da najmanje djece s ponovljenim ozljedama potječe iz gornjeg socijalnog razreda, a velika većina je iz donjeg.

Obrazovanje roditelja kao komponenta socijalnog položaja obitelji analizirano je posebno (tablica 4.). Nisu pronađene značajne razlike u razini majčina obrazovanja između pacijenata s ponovljenim ozljedama i onih s jednom. Očevo obrazovanje djece s jednom ozljedom bilo je znatno više nego one s ponovljenim ozljedama ($F = 7,274$; $p = 0,008$).

Korelacijska analiza otkrila je da je ponavljanje ozljeda kod djece značajno povezano sa spolom ($r = 0,246$, $p < 0,01$) i dobi ($r = -0,265$, $p < 0,01$) (tablica 5.). Značajne poveza-

could be observed that the lowest number of injury repeaters is in upper social class and the vast majority in the lower social class.

Parental education as a component of family social position was analysed separately (Table 4). There were no significant differences in mother's level of education between patients with RI and SI. Father's education of children with SI was significantly higher than of children with IR ($F = 7.274$; $p = 0.008$).

Correlation analyses revealed that injury repetition in children was significantly related to gender ($r = 0.246$, $p <$

Tablica 5. Spearmanove korelacije između obilježja ispitanika i socijalnih obilježja djece s dentalnim traumama (N = 151)
Table 5 Spearman's correlations between some patient characteristics and socio-economic parameters in children with dental injuries (N = 151)

	Spol • Gender	Dob • Age	Broj ozlj. zuba •	Ponavlj. ozljeda • Injury repetition	ISP	Obrazov. oca • Father's education	Obrazov. majke • Mother's education
Spol • Gender	1.000	-.242**		.246**	-.034	.033	-.004
Dob • Age	-.242**	1.000		-.265**	.105	-.114	-.090
Broj ozlj. zuba •							
Ponov. ozljede • Injury repetition	.246**	-.265**		1.000	-.182*	-.219**	.085
ISP	-.034	.105		-.182*	1.000	-.784**	-.806**
Obrazov. oca • Father's education	.033	-.114		.219**	-.784**	1.000	.507**
Obrazov. majke • Mother's education	-.004	-.090		.085	-.806**	.507**	1.000

Legenda • Legend: ISP – indeks socijalnog položaja • index of social position

* Značajnost korelacije na razini 0,05 • Significant at level of 0.05

** Značajnost korelacije na razini 0,01 • Significant at level of 0.01

nosti dobivene su za ponavljanje ozljeda te ISP ili nizak SES ($r = -0,182$, $p < 0,05$). Negativne korelacije pokazuju povezanost s donjim socijalnim razredom koji ima više vrijednosti ISP-a. Očevo obrazovanje također je bilo znatno povezano s ponavljanjem ozljeda, ali ne i majčino.

Rasprava

Glavni nalaz u ovom istraživanju jest da djeca s ponovljenim ozljedama imaju značajno više vrijednosti ISP-a (42,89) u usporedbi s ispitanicima s jednom ozljedom, te da potječu iz donjega socijalnog razreda. Na temelju indeksa socijalnog položaja (ISP) 54,4 posto djece s ponovljenim ozljedama iz donjeg je socijalnog razreda, a samo 11,8 posto pripada gornjem. Dobiveni omjer mogućnosti/izgleda (OR) pokazuje da pacijenti iz donjega socijalnog razreda imaju 1,54 puta viši rizik za ponavljanje ozljeda od onih iz gornjega.

Rezultati dobiveni u ovom istraživanju pokazuju da nizak SES obitelji znači za djecu rizik od ozljede zuba. Pripadnost donjem socijalnom razredu povećava rizik od ponavljanja ozljeda 1,5 puta. Visoko očevo obrazovanje protektivno (zaštitno) djeluje na ozljede zuba kod djece. Djeca iz obitelji s niskim SES-om žive u manje sigurnom okolišu i u većoj su opasnosti od ozljeđivanja. Istaknimo da viša razina roditeljskog obrazovanja i socijalno-ekonomskog statusa osiguravaju djetetu bolji kognitivni i psihosocijalni razvoj (25). Drugo je objašnjenje da se djeca iz obitelji s visokim primanjima osjećaju socijalno sigurnijima, žive u sigurnijoj okolini i manje su izložena stresnim situacijama (21).

Samo u nekoliko istraživanja istaknuto je da visoko obrazovanje roditelja i visok SES mogu djelovati protektivno u slučaju ozljeđivanja djece (21, 22). U nekim drugim studijama nije otkriven nikakav utjecaj SES-a na ozljede djece (26, 27), a nekoliko autora zaključilo je da visok SES povećava rizik od ozljeda (18, 28). U većini istraživanja podupiru se nalazi da su traumatske ozljede zastupljenije kod djece iz socijalno depriviranih obitelji s niskim SES-om (2, 20, 22, 23). Istodobno je zapaženo protektivno djelovanje visokog obrazovanja roditelja na traumatske ozljede zuba kod djece (21,

.01) and age ($r = -0,265$, $p < .01$) (Table 5). Significant associations were obtained for injury repetition and ISP or lower SES ($r = -0,182$, $p < 0,05$). Negative correlation reflects association with lower social class which is represented with higher ISP values. Father's education was also significantly correlated with injury repetition, but not mother's education.

Discussion

The primary finding of this study was that injury repeaters display significantly higher ISP value (42.89) compared to subjects with SI and are coming from lower social class. Based on the index of social position, 54.4% of injury repeaters were in the lower social class, and only 11.8% of them were in the upper social class. The obtained odds ratio showed that patients from lower social class have 1.54 times higher risk for injury repetition than those from upper social class.

The results obtained in the present study suggest that low family SES represents risk factor for dental injuries in children. Belonging to the low social class increases risk for injury repetition 1.5 times. Higher education of the father represents a protective factor for dental traumas in children. Children coming from low-SES families live in less safe environment with higher risk for injuries. On the other hand, it might be possible that the higher level of parents' education and socioeconomic status provide environment for better child's cognitive and psychosocial development (25). The other explanation is that children from the high income families feel more socially secure, live in safer environment, and are less exposed to stress related situations (21).

Very few studies have found that higher parent education and high SES might be protective against injuries in children (21, 22). Some other studies have failed to detect any effect of socioeconomic status on childhood injuries (26, 27), while a few studies concluded that high SES represents increased risk for injuries (18, 28). Most studies support the finding that traumatic injuries are more prevalent among children from socially deprived families displaying low SES (2, 20, 22, 23). At the same time, the protective effect of parental high education on traumatic injuries to the teeth has

22). Literatura upućuje na to da je obrazovanje roditelja značajno povezano s ozljedama djece. Roditelji s niskom razinom obrazovanja imaju djecu koja će se možda češće ozlijediti od djece iz obitelji u kojima su roditelji visoko školovani. Naši rezultati pokazuju da je očeva visoko obrazovanje (tj. fakultetska naobrazba) značajno povezano s niskom razinom ozljeda djece i može se smatrati protektivnim u slučaju ponavljanja ozljeda (10).

Različiti su mehanizmi kojima SES djeluje na djetetovo blagostanje. Nizak SES onemogućuje pristup nekim resursima i iskustvima, što pogađa djetetov kognitivni i emocionalni razvoj. Djeca s niskim SES-om češće imaju probleme s rastom i razvojem i češće se ozlijede. Bradley i Corwyn (25) upozorili su na snažnu povezanost SES-a s kognitivnim i socijalno-emocionalnim razvojem djeteta.

Nije lako definirati sve mehanizme kojima SES utječe na djetetovo ponašanje. Nizak SES djeluje kao kronični stresor i utječe na neuroendokrine parametre (29, 30). Može također povećati razinu djetetove agresije i nasilja, što može pridonijeti češćim ozljedama i ponovnim ozljeđivanjima (3, 5, 25). Spinks i suradnici (5) istaknuli su da je nizak SES, mjeren prema prihodima kućanstva, također povezan s agresijom (5). Indikatori SES-a snažno su povezani s kognitivnim razvojem od najranije dobi i tijekom djetinjstva. Pokazano je da je nizak SES često povezan sa slabim adaptivnim funkcioniranjem i povećanom agresivnošću (25).

U nekim je istraživanjima upozoreno na povezanost kroničnog stresa s niskim SES-om i mogući utjecaj na povećani rizik od bolesti i ozljeda (25, 31). SES se obično definira na temelju obrazovanja, prihoda i zanimanja. Obrazovanje se smatra najvažnijim konceptom SES-a jer osigurava znanje i način života koji omogućuju bolje obrazovanim roditeljima da ostvare pristup informacijama i sredstvima za poboljšanje zdravlja (31). Socijalni položaj može utjecati na djetetovo znanje i ponašanje i staviti ga u situaciju povećanog rizika od ozljede (24).

Smatra se da je nizak SES povezan s drugačijim djetetovim izlaganjem nepovoljnim okolišnim uvjetima. Kvaliteta života u roditeljskom domu snažno je povezana s djetetovim kognitivnim razvojem. Siromašna djeca češće su izložena mnogobrojnim okolišnim opasnostima koje povećavaju rizik od ozljeđivanja (25, 32). Istraživanje izlaganja kumulativnim čimbenicima rizika pokazuje da djeca izvrnuta većem broju rizičnih čimbenika mogu imati teškoće u kognitivnom funkcioniranju. Kumuliranje većeg broja rizičnih čimbenika također povećava vjerojatnost od nepovoljnog kognitivnog i socijalno-emocionalnog razvoja (25, 32).

Istraživanje SES-a kod mladih vozača automobila nije otkrilo veću povezanost s ponavljanjem ozljeda (24). Alkon i suradnici (33) istaknuli su da socijalno-ekonomska okolina može pridonijeti povećanom ponavljanju ozljeda. Goldingova (13) je pokazala da se djeca sa samo jednom ozljedom vrlo malo razlikuju od one koja uopće nisu imala ozljeda. Djeca s ponovljenim ozljedama mnogo su češće potjecala iz donjega socijalnog razreda i po ponašanju su se razlikovala od onih s jednom ozljedom (13).

Braun i suradnici (14) pokazali su da je ponavljanje ozljeda kod djece mnogo češće u skupini sa socijalnim čimbe-

been observed (21, 22). The literature suggests that parental education is significantly associated with child's injuries. Parents with low educational level have children who are more likely to be injured than children of parents with high educational. Our results show that the father's highest level of education (i.e., university education) is significantly associated with low rate of children's injuries and could be considered as protective against injury repetition (10).

Mechanisms by which SES affects child's well-being are different. Low SES leads to the lack access to some resources and experiences, thus affecting child's cognitive and emotional development. Children from low SES families are more likely to manifest growth and developmental problems and to suffer more injuries. Bradley and Corwyn (25) pointed out to the strong association of SES with a cognitive and socioemotional development in children.

It is not easy to define all mechanisms through which SES influence child's behaviour. Low SES acts as a chronic stressor and influence neuroendocrine parameters (29, 30). It can lead to the increased level of child's aggression and violence which could contribute to the higher rate of injuries and injury repetition (3, 5, 25). Spinks et al. (5) established that lower socioeconomic status as measured by household income was also associated with aggression in children (5). SES indicators are strongly related to cognitive development from infancy through childhood. It has been shown that low SES is often associated with poor adaptive functioning and increased aggressiveness (25).

Some studies indicate that chronic stress associated with lower SES may increase risk for morbidity and injuries (25, 31). SES is traditionally defined by education, income, and occupation. Education is considered to be the most basic SES concept since it provides knowledge and life style that allow better-educated parents to gain access to information and resources to promote health (31). Social background can influence the child's knowledge and behaviour, and put the child to increased risk of injury (24).

It is considered that low SES is associated with child's differential exposure to unfavourable environmental conditions. The quality of the home environment is strongly linked to children's cognitive development. Children who are poorer are more often exposed to multiple environmental hazards that increase risk for injuries (25, 32). Research on cumulative risk exposure shows that children exposed to more risk factors can suffer in cognitive functioning. The accumulation of multiple risk factors also elevates the probability of adverse cognitive and socioemotional development (25, 32).

Study of SES in young car drivers with injury repetition did not reveal significant association (24). Alkon et al. (33) found that socioemotional environment may contribute to the increased rate of injury repetition. Golding (13) showed that children who had had a single accident differed little from children who had had no accidents. Accident repeaters more frequently belonged to the lower social class and differ from those with single injury in their pattern of behaviour (13).

Braun et al. (14) showed that recurrent injuries in children are more frequent in group with social risk factors. Low SES can be considered as risk factor for repetition of injuries

nicima rizika. Nizak SES može se smatrati rizičnim čimbenikom za ponavljanje ozljeda. Socijalni čimbenici rizika češće su zastupljeni kod djece s ponovljenim ozljedama negoli kod one sa samo jednom ozljedom. Nizak SES kao socijalni rizični čimbenik te niska razina obrazovanja bili su mnogo zastupljeniji kod djece s ponovljenim ozljedama.

Prema teoriji socijalne epidemiologije etiološki okvir modela *domaćin – sredstvo – okoliš* omogućuje analizu kompleksnih interakcija *domaćina* s njegovim *okolišem* koji dovode do ozljeda. Smatra se da tom interakcijom *socijalni okoliš* mijenja domaćinovu osjetljivost i zahvaća neuroendokrinu funkciju (34). Preventivni pristup ozljedama moguć je tako ne samo intervencijama u fizičkom okolišu, nego i modificiranjem djetetove psihosocijalne okoline.

Zaključak

Ponavlanje ozljeda kod djece pokazuje značajnu povezanost sa spolom, dobi i niskim socijalno-ekonomskim statusom. Djeca iz donjega socijalnog razreda u većoj su opasnosti od ponavljanja ozljeda. Obrazovanje roditelja znatno utječe na ponavljanje ozljeda. Čini se da očeva visoka naobrazba zaštitno djeluje na rizik od ozljeda zuba kod djece.

in children. Social risk factors are more frequently present in children with repeated injuries than in children with only one or without injuries. Low SES as a social risk factor (and low education) was considerably more frequent in children with repeated injuries.

According to the theory of social epidemiology the aetiological framework of „host – agent – environment“ model provides good opportunity to analyse complex interactions of the „host“ with its „environment“ leading to injuries. It is considered that by this interaction „social environment“ alters host the susceptibility by affecting neuroendocrine function (34). Preventive approach to injuries may thus inquire not only interventions in physical environment, but also modifications of child's psychosocial environment.

Conclusion

Injury repetition in children shows significant correlations with gender, age, and lower socioeconomic position. Children from lower social class are at higher risk for injury repetition. Parental education has a significant influence on injury repetition in children. Father's higher education seems to have protective influence on risk for injuries in children.

Abstract

Some children are more frequently affected with traumatic dental injuries (TDI) than others. Higher prevalence of injuries was observed in children with low socioeconomic status (SES). The objective of this study was to investigate whether the SES of children with injury repetition (IR) differs from those with single injury (SI). The aim was also to establish whether lower SES represents a risk factor for injury repetition in children with dental trauma. **Material and Methods:** The study comprised a sample of 151 children with TDI aged 6 – 17 years (99 males and 52 females) who were treated for TDI. Social status of children was assessed by means of the Hollingshead Two-Factor Index of Social Position. All subjects were categorized into three social classes: 1. upper, 2. middle, and 3. lower social class. Comparison between groups was made by using Student's t test, and chi-square test. Pearson correlation and odds ratios (OR) were used to estimate association of SES to injury repetition. **Results:** Majority of injury repeaters belonged to the lower social class displaying higher ISP value (42.89) compared to subjects with SI (38.5) ($p = 0.018$). Patients from lower social class have 1.54 times higher risk for injury repetition than those from upper social class (OR = 1.542; CI = 0.564-4.214). **Conclusion:** Children with IR significantly differ from that with SI with regard of ISP and SES. Belonging to the lower social class can imply an increased risk for injury repetition.

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Address for correspondence

Dr. Tomislav Škrinjaric
University of Zagreb
School of Dental Medicine
Department of Paediatric and Preventive Dentistry
Gundulićeva 5, HR-10 000 Zagreb
Tel: + 385 1 4802 111
skrinjaric@sfgz.hr

Key words

Dental trauma; Socioeconomic status; Injury repetition.

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