

# Faktori koji utječu na oporavak djece nakon tonzilektomije

## Factors affecting the recovery of children after tonsillectomy

Blaženka Pavlič<sup>1</sup>, Snježana Mirilović<sup>1</sup>, Karolina Vižintin<sup>1</sup>, Afroditia Gavrilidis<sup>1</sup>, Vladimir Bauer<sup>1</sup>, Marko Velimir Grgić<sup>2</sup>

<sup>1</sup> General Hospital Karlovac, A. Štampara 3, 47 000 Karlovac, Croatia

<sup>2</sup> University Hospital Sestre milosrdnice, Vinogradska cesta 29, 10 000 Zagreb, Croatia

### Sažetak

**Uvod:** Operacije krajnika među najčešćim su vrstama operacija koje se izvode na djeci. Cilj je ovog istraživanja utvrditi kako dob, spol, tjelesna visina i težina utječu na oporavak djece nakon tonzilektomije.

**Metode:** U ovom je istraživanju sudjelovalo 66 djece, podjednako djevojčica i dječaka, u dobi od 4 do 9 godina. Istraživanje obuhvaća sedam pitanja o čimbenicima koje smo procijenili značajnima za postoperativni oporavak djece (unos tekućine, unos hrane, spavanje, dnevne aktivnosti, raspoloženje, komunikacija, hospitalizacija), a provode ga medicinske sestre tijekom trećeg, sedmog i petnaestog postoperativnog dana telefonskim upitom.

**Rezultati:** Statistički značajna razlika između dječaka i djevojčica utvrđena je tijekom sedmog dana (dnevne aktivnosti) i petnaestog dana (spavanje). Pearsonovim testom korelacije utvrđena je statistički značajna negativna korelacija u svim skupinama djece s dobi, visinom i težinom tijekom trećeg, sedmog i petnaestog dana za konzumaciju tekućine i hrane, spavanje, dnevne aktivnosti, raspoloženje i komunikaciju. Statistički značajna razlika nije utvrđena u odnosu na hospitalizaciju.

**Zaključak:** Možemo zaključiti da se u našem uzorku fizički manja, dakle, mlađa djeca oporavljaju bolje od starije djece, što je statistički potvrđeno značajnom negativnom korelacijom između dobi, težine, visine i promatranih parametara tijekom oporavka. Nadalje, zaključili smo da se djevojčice oporavljaju bolje od dječaka, ali za većinu parametara razlika nije bila statistički značajna.

**Glavne riječi:** tonzilektomija, adenotonzilektomija, kvaliteta života

**Kratak naslov:** The recovery of children after tonsillectomy

### Abstract

**Introduction:** Tonsil operations are among the most usual operations performed on children. The aim of this study is to establish how age, sex, body height, and weight affect the recovery of children after tonsillectomy.

**Methods:** This study involved 66 children, girls and boys equally, between the ages of 4-9. The survey obtained seven questions about the factors that we have evaluated as significant for the postoperative recovery of children (fluid intake, food intake, sleep, daily activities, mood, communication, hospitalization) and was conducted by a nurse on the third, the seventh and the fifteenth postoperative day by a telephone inquiry.

**Results:** Statistically significant difference between boys and girls was found during the seventh day (daily activities) and the fifteenth day (sleep). Pearson test of correlation established a statistically significant negative correlation in the group of all children with age/height/weight during the third, seventh, and fifteenth day for the consummation of liquid and food, sleep, daily activities, mood, and communication. Statistical significance was not established in relation to the hospitalization.

**Conclusion:** We can conclude that, in our sample physically smaller thus, younger children recover better than the elder ones, which is statistically confirmed by a significant negative correlation between age, weight, height, and the observed parameters during the recovery. To a further extent, we concluded that girls recover slightly better than boys, but for most parameters the difference was not statistically significant.

**Keywords:** tonsillectomy, adenotonsillectomy, life quality

**Short title:** Oporavak djece nakon tonzilektomije

Received February 2<sup>nd</sup> 2022;

Accepted April 8<sup>th</sup> 2022;

**Autor za korespondenciju/Corresponding author:** Blaženka Pavlič, Bartola Kašića 5, 47 000 Karlovac, Hrvatska; Tel: 098/ 246 368, e-mail: bpavlic668@gmail.com

### Uvod

Tegobe vezane za bolesti tonzila svrstavaju se među najčešće zdravstvene probleme u općoj populaciji i među najučestalije razloge posjeta liječniku u primarnoj zdravstvenoj zaštiti. Operacije tonzila jedan su od najizvođenijih operativnih zahvata u dječjoj dobi. U SAD-u godišnje se operacijama tonzila podvrgne 530 000 djece mlađe od 15 godina [1]. U Hrvatskoj operacije tonzila najčešće su izvođen operativni zahvat u otorinolaringologiji [2]. Navedene se operacije uglavnom izvode u dobi od 4 godine, podjednako kod dječaka i djevojčica. Iz tih podataka proizlazi i

### Introduction

Discomforts related to tonsil diseases are classified as one of the most common health problems in the general population and one of the most common reasons for visiting primary care physicians. Tonsil operations are among the most usual operations performed on children. In the United States, 530,000 children under the age of 15 annually undergo tonsil surgery [1], while in Croatia, the same type of operation is the most commonly performed in otorhinolaryngology [2]. Mentioned surgeries are most often conducted on girls and boys equally at the age of 4. These data

veličina javnozdravstvenog značaja tonzilektomije, kao i važnost utjecaja tonzilektomije na ukupnu kvalitetu života pacijenta.

Operacije tonzila izvode se stoljećima, a o tonzilama i tonzilektomijama stečeno je veliko znanje i iskustvo. Indikacije za tonzilektomiju dobro su poznate i uglavnom usuglašene [3, 1], operativna je tehnika u osnovi ista, a mijenjaju se tehnička sredstva koja tijekom operacije upotrebljavamo (hladni instrumenti, elektronoževi, ultrazvučni noževi, koablacijska tehnologija). Tijekom posljednjih godina najviše se mijenja odnos prema razdoblju nakon tonzilektomije. Istraživanja idu u dva smjera. Prvi istražuje koliko učinjeni zahvat poboljšava kvalitetu života pacijenta s obzirom na tegobe koje su tonzilektomiju indicirale. I drugo, sve veća pažnja posvećuje se mjerama i tehnikama za olakšavanje postoperativnog tijeka. Provode se brojna istraživanja s ciljem nalaženja najdjelotvornijeg analgetika, istražuje se kako smanjiti mučninu i povraćanje, kako što prije uspostaviti normalan unos hrane i tekućine, kako smanjiti neugodne doživljaje koji mogu pratiti operativni zahvat i kako osigurati dobar san. Sestrinska i roditeljska njega prema sestrinskim i liječničkim uputama najuže su povezane s kvalitetom života i brzinom oporavka nakon zahvata. U svakodnevnoj sestrinskoj praksi svjesni smo da se neka djeca oporavljaju brže i lakše, a neka sporije i teže. Zamjećujemo da nisu svi aspekti funkcioniranja (govor, uzimanje hrane i pića, san) jednako zahvaćeni. Pretpostavljamo da uz već proučavane faktore poput vrste operativne tehnike, vrste ili kombinacije analgetika, postoje i prediktori vezani za same pacijente koji bi mogli biti povezani s razlikama u oporavku.

Koncept kvalitete života dobiva na sve većoj važnosti u suvremenoj medicini [4]. Sve važniji postaju ne samo neposredni ishod i učinci neke bolesti ili zahvata već i posvemašnje osjećanje vlastite dobrobiti, duševnog, fizičkog i socijalnog napretka, stoga se provodi suvremeni pristup kvaliteti života, tzv. biopsihosocijalni pristup. Pri promatranju bolesti u kontekstu kvalitete života možemo vidjeti trajne utjecaje i one privremene, odnosno prolazne. Međutim, ako su privremeni utjecaji neugodni, mogu ostaviti trajne posljedice na formiranje stavova i percepciju bolesti. Utjecaj tonzilektomije i tegobe koje se javljaju poslije učinjenog zahvata dobar su primjer navedenog. Kvaliteta života ponajprije je subjektivan osjećaj, jedinstven za svakog ponaosob. No, da bismo u znanosti taj osjećaj mogli promatrati, bilježiti i istraživati, moramo ga pokušati objektivno izraziti. Bit je svih upitnika kvalitete života u kvantifikaciji subjektivnog. U domaćoj literaturi i literaturi na engleskom jeziku do sada ne postoji objavljen sustav za procjenu kvalitete života ili oporavka nakon tonzilektomije.

Cilj je ovog istraživanja utvrditi u kojoj mjeri dob, spol, tjelesna visina i težina utječu na oporavak djece nakon tonzilektomije.

## Pacijenti i metode

Istraživanje je provedeno u Općoj bolnici Karlovac na odjelu Otorinolaringologije. Planirano je i provedeno kao prospektivna studija na 66 konsekutivno odabranih pacijenata, odnosno djece u dobi od 4 do 9 godina koja su operirala

show the significance of tonsillectomy in public health and the important influence it has on the quality of one's life.

Tonsil operations have been performed for centuries hence, vast knowledge and experience in tonsils and tonsillectomy were acquired. The indications for tonsillectomy are well known and generally agreed upon [1, 3], and the operative technique is the same. The technical means used during surgery (cold instruments, electronic knives, ultrasonic knives, coblation technology) changed. In recent years, attitude towards the post-operative period was altered. Therefore, studies go in two directions. The first one establishes how much the procedure has improved the quality of life considering the difficulties that indicated the tonsillectomy itself. The second one deals with measures and techniques to ease the post-operative treatment to which nowadays more attention is being given. Numerous types of research are conducted on finding the most efficient analgesic, how to reduce nausea and vomiting, how to establish a normal intake of food and fluids as early as possible, how to decrease the unpleasant experiences that can accompany the surgery, or how to ensure a good sleep. Nursing and parental care by nurse and physician's instructions are closely associated with the quality of life and the recovery rate after the procedure. In everyday nursing practice, we are aware that some children recover more quickly and easily, and some slower and more difficult. We also notice that not all aspects of everyday functions, such as speech, food and fluid intake, and sleep, are equally affected. Therefore we assume that in addition to already studied factors such as the type of operative techniques, types or combinations of analgesics, there are also predictors by the patients themselves which could be accountable for these differences.

In modern medicine, the quality of life concept is increasingly gaining on its importance [4] so, nowadays not only the immediate outcome and effects of an illness or a surgery are relevant, but more emphasis is being put on the overall feeling of the patient's well-being, mental, physical and social progress. Hence, such a modern approach to the quality of life is called the biopsychosocial approach. Observing a specific disease, we can notice that the quality of life can be influenced by permanent or temporary, i. e. transitory factors which, if uncomfortable, may leave lasting consequences on the attitudes forming and perception of the disease. The effect of tonsillectomy and problems that occur after the procedure is done are good examples of such. Quality of life is primarily a subjective feeling, unique to each individual, but in science, in order to observe, record, and explore, we have to try to express it objectively. The essence of all quality of life questionnaires is in quantifying the subjective. So far, there is no published system for assessing the quality of life and recovery after tonsillectomy neither in Croatian nor in English.

The aim of this study is to establish how age, sex, body height, and weight affect the recovery of children after tonsillectomy.

## Patients and methods

The study was conducted at General Hospital Karlovac in the department of otolaryngology. It was planned and

tonzile. Detaljne karakteristike pacijenata prikazane su u Tablici 1. Svi pacijenti operirani su istom tehnikom – hladnom ablacijom tonzila, uz hemostazu bipolarnom dijatermijom. Nakon zahvata svi su podvrgnuti istom protokolu njege, s jednakim je odmakom započet unos hrane i tekućine, korišten je isti protokol analgezije (paracetamol 15mg/kg TT). Sva su djeca otpuštena iz bolnice ujutro dan nakon učinjenog zahvata te su svi roditelji dobili iste preporuke za kućnu njegu.

**TABLICA/TABLE 1.** Karakteristike ispitanika / Characteristics of respondents

	All	Boys	Girls
PATIENTS	66	33	33
MEAN AGE (years)	5,4 +/-1,4	5,2 +/-1,4	5,5 +/-1,5
4 years	28	15	13
5 years	9	5	4
6 years	14	7	7
7 years	4	1	3
8 years	11	5	6
WEIGHT (kg)	21,8 +/-6,5	21,9 +/-6,8	21,8 +/-6,4
HIGHT(cm)	118,8 +/-12,7	119,3 +/-13,4	118,3 +/-12,1

Za provedbu ove studije dobiveno je odobrenje Etičkog povjerenstva Opće bolnice Karlovac (Broj: 01-12-91/1).

Korištena je anketa sastavljena za potrebe ovog istraživanja koja sadrži 7 pitanja o čimbenicima koje smo ocijenili značajnima za postoperativni oporavak djece (unos tekućine, unos hrane, san, dnevne aktivnosti, raspoloženje, komunikacija, hospitalizam). Za svaki čimbenik ponuđeno je 5 ocjena po tipu Likertove skale gdje je 1 najveće moguće odstupanje od normalnog stanja, a 5 bez ikakvog odstupanja od inače normalnog stanja. Anketa je provedena treći, sedmi i petnaesti postoperativni dan telefonskim putem. Provodila ju je medicinska sestra s ORL odjela.

Obrada podataka napravljena je u programu Microsoft Excel 2010 i Statistics 10.

Značajnost razlika između promatranih grupa (dječaci i djevojčice) testirana je t-testom za nezavisne uzorke. Značajnost razlika između promatranih čimbenika trećeg, sedmog i petnaestog dana testirana je ANOVA testom za višekratna mjerenja. Korelacija između dobi djece, tjelesne težine, tjelesne visine i promatranih čimbenika testirana je Pearsonovim testom korelacije. Razina značajnosti iznosi  $p < 0,05$ .

## Rezultati

U istraživanju je sudjelovalo 66 djece u dobi od 4 do 9 godina, jednak broj dječaka i djevojčica. Za sve promatrane čimbenike u anketi srednje vrijednosti rezultata linearno rastu od prvog do drugog i trećeg mjerenja. Razlike srednjih vrijednosti između mjerenja značajne su za sve ispitivane čimbenike (ANOVA za višekratna mjerenja;  $p < 0,05$ ). Ako

carried out as a prospective study on 66 consecutive selected patients; children aged 4-9 years old who had tonsil surgery. Detailed patient characteristics are presented in Table 1. All patients underwent the same operational technique, cold ablation of the tonsils, along with bipolar diathermy hemostasis. After the surgery, everyone was subjected to the same care protocol, the intake of food and fluids began at the same, and the same protocol of analgesia was used (acetaminophen 15mg/kg BW). Every child was discharged from the hospital in the morning the day after the procedure was done, and all parents were given the same recommendations for home care.

The approval to implement this study was obtained from the Ethics Committee of General Hospital Karlovac (No: 01.12.91 / 1).

The survey used, which was drawn up for this study, obtains seven questions about the factors that we have evaluated are significant for the postoperative recovery of children (fluid intake, food intake, sleep, daily activities, mood, communication, hospitalization). For each factor, the participants were given 5 possible marks per Likert scale type, where 1 is the highest possible deviation from the normal state and 5 is without any deviation from the otherwise normal state. The survey was conducted by a nurse from the ENT department on the third, the seventh, and the fifteenth postoperative day by telephone inquiry.

Data analysis was done in Microsoft Excel 2010 and Statistics 10. The significance of differences between the observed groups (boys and girls) was tested by t-test for independent samples. The significance of differences between the observed factors on the third, the seventh, and the fifteenth day was tested by ANOVA test for repeated measurements. The correlation between children's age, body weight, body height, and observed factors was tested by the Pearson's correlation test. The level of significance was set at  $p < 0.05$ .

## Results

This study involved 66 children, girls and boys equally, between the ages of 4-9. For all the observed factors in the survey of mean values the results are linearly increasing from the first to the second and third measurement. The differences in mean values between the measurements are also significant for all examined factors (ANOVA for repeated measurements;  $p < 0.05$ ). If we compare the differences between boys and girls in the reported scores, we do not come across any significant differences except in daily activities on the seventh postoperative day (boys 4.1 and girls 4.6,  $p = 0.05$ ) and in sleeping on the fifteenth postoperative day (boys 4.5 and girls 4.8,  $p = 0.003$ ). The relation between age, weight, and height of subjects as well as observed factors were also studied. For that, we used Pearson's correlation test. The results are shown in Tables 2, 3, and 4.

## Discussion

The discomfort which dominates the postoperative course after tonsillectomy is pain. Pain is the most common reason

**TABLICA/TABLE 2.** Korelacija između dobi i promatranih čimbenika / Correlation between age and observed factors

Analysis Period	Correlation for all	Fluids	Food	Sleep	Activities	General mood	Communication	Hospitalization
3 <sup>rd</sup> postoperative day	r1	<b>-,3194*</b>	-,2359	-,1606	<b>-,3224*</b>	-,2309	-,2184	-,0400
	p	<b>p=,009*</b>	p=,057	p=,198	<b>p=,008*</b>	p=,062	p=,078	p=,750
7 <sup>th</sup> postoperative day	r2	-,1741	-,1835	-,0651	-,1402	,0731	,0857	-,0116
	p	p=,162	p=,140	p=,604	p=,262	p=,560	p=,494	p=,926
15 <sup>th</sup> postoperative day	r3	-,0710	-,2720	<b>-,1512*</b>	-,0836	-,1075	-,1075	,0375
	p	p=,571	p=,027	<b>p=,226*</b>	p=,505	p=,390	p=,390	p=,765

**TABLICA/TABLE 3.** Korelacija između tjelesne visine i promatranih čimbenika / Correlation between body height and observed factors

Analysis period	Correlation for all	Fluids	Food	Sleep	Activities	General mood	Communication	Hospitalization
3 <sup>rd</sup> postoperative day	r1	<b>-,4298*</b>	<b>-,3715*</b>	<b>-,2652*</b>	<b>-,3363*</b>	<b>-,2689*</b>	-,1567	-,1291
	p	<b>p=,000*</b>	<b>p=,002*</b>	<b>p=,031*</b>	<b>p=,006*</b>	<b>p=,029*</b>	p=,209	p=,302
7 <sup>th</sup> postoperative day	r2	<b>-,3065*</b>	<b>-,3000*</b>	-,1417	<b>-,2672*</b>	-,0275	,1562	-,0419
	p	<b>p=,012*</b>	<b>p=,014*</b>	p=,256	<b>p=,030*</b>	p=,826	p=,210	p=,738
15 <sup>th</sup> postoperative day	r3	<b>-,2565*</b>	<b>-,3720*</b>	<b>-,2912*</b>	-,1905	-,2140	-,1747	-,0239
	p	<b>p=,038*</b>	<b>p=,002*</b>	<b>p=,018*</b>	p=,125	p=,085	p=,161	p=,849

**TABLICA/TABLE 4.** Korelacija između tjelesne težine i promatranih čimbenika / Correlation between body weight and observed factors

Analysis period	Correlation for all	Fluids	Food	Sleep	Activities	General mood	Communication	Hospitalization
3 <sup>rd</sup> postoperative day	r1	<b>-,3774*</b>	<b>-,3688*</b>	<b>-,2586*</b>	<b>-,3341*</b>	<b>-,3789*</b>	<b>-,2816*</b>	-,2407
	p	<b>p=,002*</b>	<b>p=,002*</b>	<b>p=,036*</b>	<b>p=,006*</b>	<b>p=,002*</b>	<b>p=,022*</b>	p=,052
7 <sup>th</sup> postoperative day	r2	<b>-,2690*</b>	<b>-,2591*</b>	-,2280	-,1471	-,0162	,0610	-,1793
	p	<b>p=,029*</b>	<b>p=,036*</b>	p=,066	p=,238	p=,897	p=,626	p=,150
15 <sup>th</sup> postoperative day	r3	-,0025	<b>-,3243*</b>	-,1876	-,1403	-,1362	-,1362	-,0920
	p	p=,984	<b>p=,008*</b>	p=,131	p=,261	p=,276	p=,276	p=,463

uspoređujemo razlike između dječaka i djevojčica, u rezultatima ne nalazimo značajne razlike osim tijekom sedmog postoperativnog dana u dnevnim aktivnostima (dječaci 4,1 i djevojčice 4,6  $p = 0,05$ ) te petnaestog postoperativnog dana u spavanju (dječaci 4,5 i djevojčice 4,8  $p = 0,003$ ).

Istražena je povezanost između dobi, tjelesne težine i visine ispitanika i promatranih čimbenika. Upotrebili smo Pearsonov test korelacije. Rezultati su prikazani u Tablicama 2, 3 i 4.

## Rasprava

Tegoba koja dominira postoperativnim tijekom nakon tonzilektomije jest bol. Bol je najčešći razlog dolaska u bolnicu ili konzultacije sa zdravstvenom službom [5] te je čimbenik koji u velikoj mjeri određuje komponente kvalitete života tijekom oporavka nakon zahvata. Kontrola boli utječe

for visiting or consulting a physician at a health care service [5]. It is also a factor that, by most, determines the components of life quality during the recovery itself. Controlling the pain, therefore, affects the intake of food and fluids, the ability to speak and communicate, sleeping habits, etc. Almost 70% of respondents have suffered from speech disorder after the surgery [6]. On the first day after surgery in 80% of children, we can observe some negative changes in their behavior, while in one-third of them, these changes remain detectable for as long as two weeks after the procedure [7]. The mentioned study does not identify which behavioral components have been altered but observes all of them combined and in general. The focus is on the need for determining the segments of this modified behavior and the factors leading toward this change. Here too, the pain stands out as one of the dominating factors, while surgical techniques and anesthesia procedures influen-

i na unos hrane i tekućine te na komunikaciju, govor i san. Gotovo 70 % ispitanih ima poremećaj govora nakon zahvata [6]. Prema jednoj studiji prvi dan nakon zahvata kod 80 % ispitanih djece mogu se zamijetiti negativne promjene u ponašanju, a kod trećine njih promjene ostanu zamjetljive i do dva tjedna nakon zahvata [7]. Spomenuta studija ne identificira koje su komponente ponašanja promijenjene, nego ih promatra sve zajedno i uopćeno. Ističe se potreba za određivanjem komponenti promijenjenog ponašanja i čimbenika koji dovode do promjena. I ovdje se bol ističe kao dominantan čimbenik, a u manjoj su mjeri istaknute kirurška tehnika i anesteziološka procedura. Rad McLaren i sur. pokazuje da jedna trećina djece nakon zahvata ima klinički značajan i mjerljiv poremećaj spavanja, češće i izrazitije ona djeca koja su inače anksiozna i koja imaju jače bolove [8]. Na dojmove djece nakon tonzilektomije utječu vrijeme nakon zahvata, dob, anksioznost i eventualna prijašnja iskustva. Uočena je značajna pozitivna korelacija između anksioznosti i intenziteta boli [9]. Intenzitet boli sigurno ima utjecaj na sve naše promatrane parametre. Da bi taj utjecaj bio što manji, kod svih ispitanika koristili smo se istim protokolom analgezije. U nepostojanju standardiziranih parametara za praćenje kvalitete oporavka nakon tonzilektomije, odredili smo one koji su nam se iskustveno činili najvažnijima i za koje smo pronašli primjere u literaturi. No, nismo našli primjer u kojem su svi parametri promatrani u ovom istraživanju praćeni na istom uzorku djece.

Ideja telefonskog upitnika u praćenju postoperativnog tijeka kod različitih stanja, pa i kod operacija tonzila, nije nova. Još 2000. godine Rosbe i suradnici [6] pokazali su da je telefonsko praćenje siguran, koristan i po troškovima racionalan način postoperativnog praćenja djece koja su bila podvrgnuta zahvatu tonzilektomije te da je ista metoda dobro prihvaćena i poželjna za roditelje. Unatoč dokazanim, pregledom literature ne nalazimo da je metoda češće korištena ili opisana. Telefonsko je praćenje osmišljeno i provedeno u svrhu ovog istraživanja. Provodeći ga u interakciji s roditeljima, a često i s djecom, shvatili smo prednosti takve komunikacije i njezine praktične mogućnosti. Kvalitetno razrađena pitanja i precizni odgovori mogu nadopuniti, a ponekad i zamijeniti postoperativne kontrolne preglede. Time se doprinosi smanjenju potrebe za odlaskom otorinolaringologu, kao i smanjenju troškova. Proširenjem istraživanja na veći broj djece i širi raspon dobi djece te usporedbom s kliničkim nalazom na kontrolnim pregledima, mogli bismo odrediti „cut-off point“ rezultata u anketi na osnovi kojeg bi medicinska sestra mogla savjetovati roditeljima mogu li nastaviti s postoperativnom njegom sami, trebaju li posjetiti obiteljskog liječnika ili je potrebno javiti se otorinolaringologu.

Rezultati ovog istraživanja i drugih studija teško su usporedivi. Različita je metodologija prikupljanja podataka te su različiti parametri praćenja. Jones et al. sur. kod 97 % ispitanika opisuju povratak normalnim prehranbenim navikama između drugog i četvrtog tjedna poslije operacije, a tijekom istog razdoblja san se normalizirao kod 93 % ispitanika [9]. Naši su rezultati slični, ali u kraćem razdoblju. Između sedmog i petnaestog dana srednje vrijednosti skorova porasle su s 3,9 na 4,7 za parametar uzimanja krute hrane i s 4,0 na 4,6 za parametar sna. Shodno navedenom, 100 %

ce the recovery to a lesser extent. The McLaren and associates study concludes that, after the operation, one-third of the children have a clinically significant and measurable sleep disorder, which is more frequent and more distinct for those children who are generally more anxious and those who feel more severe pain [8]. Children's impressions after tonsillectomy are affected by time after the procedure, age, anxiety, and previous experiences. A notable positive correlation between anxiety and pain intensity has been discovered [9]. Thus pain intensity certainly has an impact on all of our monitored parameters. In order to minimize this influence as much as possible, we used the same protocol of analgesia with all of our subjects. In the absence of standardized parameters for monitoring the quality of recovery in tonsillectomy, we have identified those which, according to our experience, seemed the most relevant and which examples we could find in the literature. We didn't find an example of all observed parameters on the same sample of children.

The idea of a telephone questionnaire to monitor the postoperative course in various conditions, as well as tonsil surgery, is not a new one. In 2000, Rosbe and associates [6] showed that telephone monitoring is safe, useful, and, in terms of expenses, a rational way of postoperative follow-up of children who have undergone a tonsillectomy and that the same method is well accepted and preferable by their parents. Despite all this, by reviewing the literature, we concluded that the method was not often used or described, so we designed and conducted a telephone monitoring for our research. While conducting this research and interacting with the parents, and often even the children, we realized the benefits of such communication and its practical possibilities. Well-elaborated questions and precise answers can supplement and sometimes replace postoperative checkups. By this method, we can reduce the patient's need for going to an otolaryngologist and also reduce expenses. By expanding the research to a larger number of children and a broader age range, along with comparing clinical findings gained on the checkups, we could define a "cut-off point" score in the survey. Accordingly, a nurse can then advise the parents whether to continue the postoperative care themselves, visit the family doctor, or, if it is necessary, contact the otolaryngologist.

The results of our study and other studies are difficult to compare because the methodology of data collection and monitoring parameters are different. Jones et al. describe the return to normal eating habits between the second and fourth week after surgery in 97% of subjects, while the same period in 93.0% of patients is necessary to normalize sleeping habits [9]. Our results are similar as well, but by a much shorter period of time. Between the seventh and the fifteenth day, the mean scores increased from 3.9 to 4.7 for taking the solid food parameter and from 4.0 to 4.6 for the sleep parameter. Furthermore, 100% of our respondents for these parameters report on the fifteenth day a state without deviation or with a slight deviation compared to the time before the procedure.

Rosbe et al. describe problems in communication in about 68% of their respondents, while 89% of them have returned to their normal activities three weeks after the opera-

naših ispitanika za ove parametre petnaesti dan izvještava o stanju bez odstupanja ili s blagim odstupanjem u odnosu na vrijeme prije zahvata.

Rosbe i suradnici opisuju u svom uzorku probleme komunikacije kod oko 68 % ispitanika, a 89 % ih se vratilo uobičajenim aktivnostima nakon tri tjedna od operativnog zahvata [6]. Među našim ispitanicima komunikacija je drugi najsnažnije promijenjen parametar, odmah nakon uzimanja hrane, ali do petnaestog postoperativnog dana srednja vrijednost porasla je s 3,6 na 4,9 što je i najveći srednji skor među svim parametrima.

Budući da smo imali tri mjerenja, mogli smo pratiti i dinamiku oporavka. Vidljivo je da se oporavak ubrzava te između sedmog i petnaestog dana dostiže gotovo maksimalne skorove po svim promatranim parametrima u zadnjem mjerenju, odnosno petnaesti dan.

Ograničenje naše studije tiče se izostavljanja prvog postoperativnog dana u mjerenjima. Mjerenja počinju treći postoperativni dan. Već su tada skorovi relativno visoki, odnosno odstupanja naših parametara od normale malena su (uzimanje hrane = 3,2; komunikacija, uzimanje tekućine i dnevne aktivnosti = 3,6; raspoloženje = 3,7; san = 3,9 i hospitalizam = 4,3). Provođenjem ankete tijekom prvog postoperativnog dana vjerojatno bi se dobili rezultati koji bi bili pogodniji za usporedbu.

## Zaključak

Promatrajući čimbenike spola, dobi, visine i težine zaključujemo da se u našem uzorku mlađa djeca oporavljaju bolje od starije djece, što je potvrđeno statistički značajnom negativnom korelacijom između dobi/težine/visine i promatranih parametara oporavka. Uz to, djevojčice se u manjoj oporavljaju bolje od dječaka, ali za većinu parametara razlika nije statistički značajna. Jednako tako, možemo zaključiti da tegobe nakon zahvata nestaju do petnaestog postoperativnog dana.

Telefonski upit i praćenje djece nakon tonzilektomije standardiziranim anketnim upitnikom pokazalo se kao učinkovita i poželjna metoda koja se izvrsno može nadopunjavati s liječničkim kontrolnim pregledima, a često ih i zamijeniti.

## Nema sukoba interesa

## Literatura/References

- [1] Baugh RF, Archer SM, Mitchell RB. et al. Clinical practice guideline: tonsillectomy in children. *Otolaryngol Head Neck Surg.* 2011; 144 (1): 1–30.
- [2] Stevanović S1, Aras I, Baudoin T, Drvis P. Indications for tonsillectomy in children aged under 16 years in ENT Department of Sestre Milosrdnice Clinical Hospital. *Lijec Vjesn.* 2008 Jul-Aug;130 (7-8): 201–4.
- [3] Baudoin T, Bura M, Munitic A. Smjernice za tonzilektomiju Ministarstva zdravstva Republike Hrvatske, 2001., <http://www.mzss.hr/>. Pristupljeno: 1. 9. 2021.
- [4] Senska G, Ellermann S, Ernst S, Lax H, Dost P. (2010) Recurrent Tonsillitis in Adults Quality of life after Tonsillectomy. *Dtsch Arztebl int.* 107 (36): 622–8.

tion [6]. Among our examinees, communication is the second most modified parameter, immediately after eating, but until the fifteenth day of postoperative treatment, the mean score increased from 3.6 to 4.9, which is the highest median score among all the parameters.

Considering that we had three measurements, we were able to track the dynamics of the recovery. It is evident that the recovery is accelerating between the seventh and the fifteenth day while reaching nearly maximum scores in all observed parameters on the last day of measurement.

The deficiency of our study is the omission of the first postoperative day in the measurements since we began them on the third day. Even then, the scores are relatively high, that is, the deviations of our parameters from the normal are small (food intake 3.2; communication, fluid intake, and daily activities all 3.6; general mood 3.7; sleep 3.9; hospitalization 4.3). If conducted on the first day, the survey would probably bring more valuable results for comparison.

## Conclusion

Considering the factors such as gender, age, height, and weight, we can conclude that in our sample physically smaller thus, younger children recover better than the elder ones, which is statistically confirmed by a significant negative correlation between age, weight, height, and the observed parameters during the recovery. To a further extent, we came to a conclusion that girls recover slightly better than boys, but for most parameters, the difference was not statistically significant. Equally, we can finalize that the symptoms no longer exist by the fifteenth postoperative day.

The telephone inquiry and monitoring of the children after tonsillectomy by standardized questionnaire proved to be an effective and preferable method that can excellently complement medical checkups and often even replace them.

## Authors declare no conflict of interest

- [5] Rungby JA, Rømeling F, Borum P. Tonsillectomy: assessment of quality by consultation rate after discharge. *J Laryngol Otol.* 1999 Feb; 113 (2): 135–9.
- [6] Rosbe KW, Jones D, Jalisi S, Bray MA (2000) Efficacy of postoperative follow-up telephone calls for patients who underwent adenotonsillectomy. *Arch Otolaryngol Head Neck Surg.* 126 (6): 718–22.
- [7] Fortier MA, Del Rosario AM, Rosenbaum A, Kain ZN. Beyond pain: predictors of postoperative maladaptive behavior change in children. *Paediatr Anaesth.* 2010 May; 20 (5): 445–53.
- [8] MacLaren JE, Kain ZN. Prevalence and predictors of significant sleep disturbances in children undergoing ambulatory tonsillectomy and adenoidectomy. *J Pediatr Psychol.* 2008 Apr; 33 (3): 248–57.
- [9] Crandall M1, Lammers C, Senders C, Braun JV. Children's tonsillectomy experiences: influencing factors *Health J Child Care.* 2009 Dec; 13 (4): 308–21.