



## Life satisfaction and anxiety in women with urinary incontinence

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### Summary

**Background** This study aimed to examine satisfaction with life in patients with urinary incontinence and patients who underwent an operative procedure due to urinary incontinence.

**Methods** Women with a medical indication for surgery due to urinary incontinence problems but who had not yet had surgery ( $N=110$ ) and same-age women who had had a surgical procedure for urinary incontinence ( $N=101$ ) completed a set of questionnaires.

**Results** The results showed that women with urinary incontinence had significantly higher life satisfaction than women who underwent the operation. Contrary to expectations, women with urinary incontinence problems reported equal levels of life satisfaction to a comparable sample of postmenopausal normative women. Higher levels of life satisfaction were related to higher education level, employment, higher perceived socioeconomic level, and urban place of living.

**Conclusion** It is important for physicians to address the problem of urinary incontinence with their patients and to examine the present anxiety symptoms, given that they may affect their subjective wellbeing.

**Keywords** Operative procedure · Pelvic floor · Physical health · Social activity · Sexuality

### Lebenszufriedenheit und Ängstlichkeit bei Frauen mit Harninkontinenz

#### Zusammenfassung

**Grundlagen** Ziel dieser Studie war es, die Zufriedenheit mit dem Leben bei Patient\*innen mit Harninkontinenz und Patient\*innen zu untersuchen, bei denen aufgrund von Harninkontinenz ein operativer Eingriff durchgeführt wurde.

**Methodik** Frauen, die aufgrund von Harninkontinenzproblemen eine medizinische Indikation für eine Operation hatten, aber noch nicht operiert wurden ( $n=110$ ), und gleichaltrige Frauen mit einem chirurgischen Eingriff wegen Harninkontinenz ( $n=101$ ) füllten Fragebögen aus.

**Ergebnisse** Die Ergebnisse zeigten, dass Frauen mit Harninkontinenz eine signifikant höhere Lebenszufriedenheit hatten als Frauen, die sich der Operation unterzogen hatten. Entgegen den Erwartungen gaben Frauen mit Harninkontinenzproblemen die gleiche Lebenszufriedenheit an wie eine vergleichbare Stichprobe der normativen Stichprobe nach der Menopause. Ein höheres Maß an Lebenszufriedenheit hing mit einem höheren Bildungsniveau, einer Erwerbstätigkeit, einem höheren wahrgenommenen sozioökonomischen Niveau und einem städtischen Wohnort zusammen.

**Schlussfolgerung** Für Ärzt\*innen ist es wichtig, das Problem der Harninkontinenz bei ihren Patient\*innen anzusprechen und deren gegenwärtige Angstsymptome zu untersuchen, da sie das subjektive Wohlbefinden beeinträchtigen können.

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**Schlüsselwörter** Operationsverfahren · Beckenboden · Körperliche Gesundheit · Soziale Aktivität · Sexuelleben

## Introduction

Urination disorders and static disorders of the pelvic floor are important health issues that decrease life quality and influence mental and physical health [1].

The prevalence of urinary incontinence (UI) ranges from 25 to 45% [2–4] and is related to higher age, body mass index, and parity [2].

What raises concern is that help is not sought by most women with UI for their problems and these problems are not reported to a physician [2]. However, urinary incontinence (UI) has many different adverse effects on women's lives. It has been reported that over 90% of French women in the large sample had an at least mild or moderate negative effect on their quality of life, most prominently with respect to restriction from travelling or shopping [2]. Similar results were obtained in the large sample of women from four European countries [5], with UI being reported as a debilitating problem by 80% of women. Different adversities have been indicated, among which are the negative effect on physical activities, confidence, and social activities. The intensity of UI symptoms was also related to the level of impairment by the UI [5].

Further adversities are documented, as women with UI often have problems in sexual functioning. It was shown by a recent study with a large sample of middle-aged Turkish incontinent women that between 40 and 50% of women experience sexual problems in the lack of sexual arousal and desire and orgasm problems. Moreover, more intense symptoms of UI were related to more impaired sexual function [6, 7].

The level of impairment of sexual function due to UI was further related to impairment in the quality of life [4]. Quality of life in women with UI is lower compared to same-age women, with domains of emotional disturbance and social isolation especially impaired [8]. It was shown by a large-scale study with over 80,000 elderly women that women with UI, compared with women without UI, had more impaired health-related quality of life, on all eight dimensions, including general health, physical functioning, bodily pain, social functioning, and mental health [9]. Also, it is noted that quality of life deteriorates with greater severity of the incontinence [10].

The subjective wellbeing of patients with UI has been studied quite extensively, as the essential aspect of the patient's personal perspective. However, mostly the quality of life or health-related functioning was examined with different dimensions considered. On the other hand, life satisfaction, as the person's global judgement, was rarely investigated. Satisfaction with life is related to the quality of life and refers to a cognitive component of subjective wellbeing [11,

12]. Life satisfaction is an evaluation of subjective life circumstances compared with personal standards and expectations [13]. Life satisfaction is related to general health and is adversely affected by chronic illnesses [14]. In a study of post-stroke patients, UI predicted low life satisfaction, even after controlling for other possible confounding variables [15].

In the general population, life satisfaction is related to depression and anxiety, as they are all aspects of mental health and wellbeing. More specifically, it was found that life satisfaction has a stronger negative correlation with depression than with anxiety [16]. Furthermore, anxiety, as an unpleasant state of tension, uneasiness, and different autonomic and emotional symptoms, is related to stress [17]. Given that UI places a great burden on everyday life [8, 9], it is reasonable to expect that patients with UI will have higher levels of anxiety. It was pointed out by a recent systematic review that urgency and stress UI are related to anxiety and depression [18], where anxiety is both a risk factor and a repercussion of urgency UI [19]. On the other hand, it was found by another study that anxiety disorder was not a risk factor for UI. However, among people with UI, those with anxiety disorder reported more functional impairment due to UI [20]. Contrary to that, it was found by a prospective study that patients with UI who had anxiety had a lower level of incontinence than patients without anxiety symptoms [21]. Therefore, the role of anxiety in patients with UI is still inconclusive.

Furthermore, some other inconsistencies emerged from the literature. Concerning the relation of age and the level of impairment due to UI, Temml et al. found that age was not related to the quality of life [4], while Papanicolaou et al. [5] found that younger women are more affected by UI. Also, some differences in the level of impairment due to UI emerged between several European countries [5]. Thus, it should be further examined in other countries as well. Therefore, the aim of this study was to examine the satisfaction with life in patients with UI and patients who underwent an operative procedure due to UI in relation to demographic variables, duration of UI, and anxiety. It was expected that women who underwent an operative procedure would have higher levels of life satisfaction. Therefore, the hypothesis of our research was that women with urinary incontinence have had lower life satisfaction as compared to women who undergo the operation.

## Methods

### Participants

There were two separate study groups. The first group was a sample of women with urinary incontinence who were offered surgery after the examination; namely, all women in the first group had an indication for surgical correction of incontinence but they had not yet had surgery, so we called them nonsurgical

patients ( $N=110$ ). Women in the second group, the surgical patients, were women who had undergone surgical correction for urinary incontinence ( $N=101$ ). Patients from the Department of Obstetrics and Gynecology participated in the study. In the first group there were UI-diagnosed patients and in the second group patients who had undergone operative treatment due to UI.

Participants with urinary incontinence were on average 62.1 years old (standard deviation [SD]=10.6, range: 36–87), while participants after operation were on average 61.3 years old (SD=9.9, range: 34–82). There was no age difference between the samples ( $t(209)=0.57$ ,  $p=0.5726$ ) and there was no difference in demographic variables (Table 1). The majority were married and one fourth of the women were widowed. Most women had secondary schooling, reported an average socioeconomic level, and lived in urban places. Approximately one in two women was retired.

Of the sample, 5.5% did not have a child at all, while the majority had two children (56.4%). Concerning the menstrual status, 82.9% of women were postmenopausal and they had the menopause on average with 49.8 years (SD=4.2, range: 31–59 years). The participants in sample 1 had had problems with incontinence for 6.4 years on average (SD=6.9, range:

0.5–40 years). The participants in sample 2 had had problems with incontinence for 5.7 years on average (SD=6.4, range: 0.5–30 years). Of the women in sample 2, 29.7% had had a hysterectomy, 60.4% had had mesh or sling implantation, and 9.9% had had both procedures, which took place 2.3 years before participating in the study (SD=4.1).

Groups of patients were not screened and separated by pharmacological therapies they were undergoing (such as hormonal, spasmolytic, anticholinergic therapy, etc.).

### Instruments

The Life Satisfaction Scale (LSS) is a 20-item scale of satisfaction with life as a cognitive evaluation of life [11]. The SLS comprises 17 items of global satisfaction and three items for situational satisfaction. Each item is scored on a five-point scale (1: I do not agree at all to 5: I agree completely). Two items are reversely coded. The total score ranges from 20 to 100, where a higher score indicates higher levels of satisfaction. The one-dimensional structure was confirmed with a high reliability of  $\alpha=0.93$  [11]. In the current study, Cronbach's  $\alpha$  was 0.93.

The Zung Self-Rated Anxiety Scale (SAS) is a 20-item scale that evaluates general symptoms of anxiety over the previous week [22]. Each item is rated on a four-point scale (1: none or little of the time to 4: most or all of the time), and five items are reversely coded. The total score ranges from 20 to 80, where a higher score indicates higher levels of anxiety. Four lower-order factors were extracted (anxiety and panic, vestibular sensations, somatic control, and gastrointestinal/muscular sensations) with a single higher-order factor [23]. The reliability measured as Cronbach's  $\alpha$  was 0.81 [23]. In the current study, Cronbach's  $\alpha$  was 0.79.

The general data sheet comprised questions about age, marital status, education level, employment, place of living, and perceived socioeconomic status. Gynecological questions referred to parity, menstrual status, age at menopause, duration of incontinence problems, and time of seeking help.

### Procedure

The study was approved by the Ethical Committee of the Sestre Milosrdnice University Hospital Centre in Zagreb, Croatia. Informed consent was given by all participants before entering the study, and the questionnaires were then filled out by participants. In the first group patients had UI confirmed by a urogynecologist and in the second group patients had already been operated due to UI.

**Table 1** Demographic data for women with urinary incontinence ( $N=110$ ) and women after operation for urinary incontinence ( $N=101$ )

	Non-operated ( $N=110$ )	Operated ( $N=101$ )	Difference
	$n$ (%)	$n$ (%)	$\chi^2$
<b>Marital status</b>			
Married/cohabiting	74 (67.2)	72 (71.3)	$\chi^2(3)=0.61$ $p=0.8947$
Divorced	5 (4.6)	3 (3.0)	
Widow	27 (24.6)	23 (22.7)	
Single	4 (3.6)	3 (3.0)	
<b>Education level</b>			
Primary school	24 (21.8)	30 (27.7)	$\chi^2(2)=1.80$ $p=0.4076$
Secondary school	65 (50.1)	55 (54.5)	
College or university	21 (19.1)	16 (15.8)	
<b>Employment status</b>			
Employed	32 (29.1)	27 (26.7)	$\chi^2(2)=0.50$ $p=0.7790$
Unemployed	10 (9.1)	12 (11.9)	
Retired	68 (50.8)	62 (61.4)	
<b>Socioeconomic status</b>			
Below average	13 (11.8)	16 (15.8)	$\chi^2(2)=0.72$ $p=0.6977$
Average	82 (74.6)	72 (71.3)	
Above average	15 (13.6)	13 (12.9)	
<b>Place of living</b>			
Rural	25 (22.7)	36 (35.6)	$\chi^2(2)=5.51$ $p=0.0636$
Urban (up to 100,000 inhabitants)	29 (26.4)	28 (27.7)	
Urban (above 100,000 inhabitants)	56 (50.9)	37 (36.63)	

### Statistical analysis

Differences in life satisfaction and anxiety between the samples were tested by *t*-test. Correlations between life satisfaction and demographic variables, UI, and anxiety were examined by Pearson's or Spearman's rank-order coefficient of correlation, where appropriate. Finally, a hierarchical regression analysis (HRA) was used to test the significant predictors of life satisfaction. The empirical approach was taken, so only those variables that correlated significantly were entered in the HRA, where demographic variables were controlled for in the first step and anxiety score was entered in the second step. *P*-value was set to <0.05 in all analyses. The analyses were conducted in SPSS Statistics 21.0 for Windows (IBM Corp., Armonk, NY, USA).

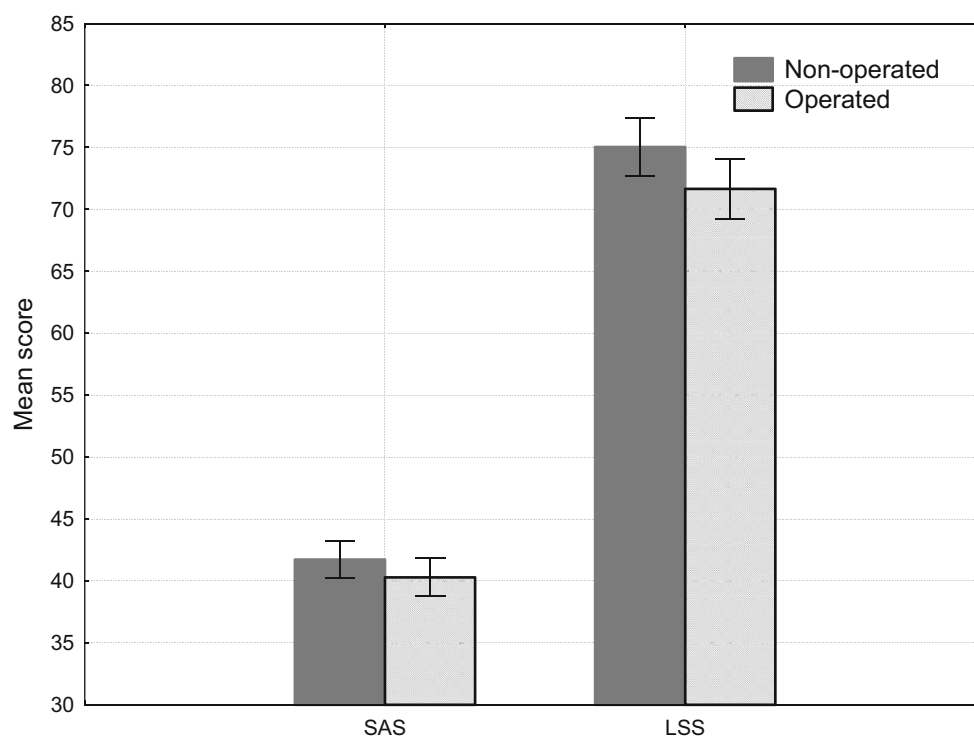
## Results

### Satisfaction with life and anxiety

As can be seen in Fig. 1, women who had had an operation for urinary incontinence had significantly lower levels of life satisfaction than women who had not had such an operation ( $t(209) = 1.98, p = 0.0488$ ). However, there was no difference between the samples in the anxiety score ( $t(209) = 1.33, p = 0.1844$ ).

Compared with a large sample of Croatian postmenopausal women [24], women with UI reported equal levels of life satisfaction ( $t(908) = 0.93, p = 0.3553$ ), while women who had had an operation reported a significantly lower level of satisfaction ( $t(899) = 2.60, p = 0.0094$ ). Compared with young women [23], the

**Fig. 1** Average score on anxiety scale (SAS) and satisfaction with life (LSS) in women with urinary incontinence ( $N = 110$ ) and women who had undergone an operation for urinary incontinence ( $N = 110$ )



**Table 2** Correlations of Life Satisfaction Scale (SAS) score with demographic and gynecological variables and anxiety

	Non-operated (N= 110)	Operated (N= 101)
Age	-0.04	0.01
Marital status <sup>a</sup>	-0.14	-0.08
Education level <sup>b</sup>	0.16	0.21*
Employment status <sup>c</sup>	-0.23*	-0.22*
Socioeconomic status <sup>d</sup>	0.39**	0.29**
Place of living <sup>e</sup>	0.20*	0.13
Duration of incontinence problems (years)	-0.18	0.01
Anxiety (SAS)	-0.35**	-0.28**

\* $p < 0.05$ , \*\* $p < 0.01$   
<sup>a</sup>Marital status: 1: married/cohabiting; 2: without partner  
<sup>b</sup>Education level: 1: primary school; 2: secondary school; 3: college/university  
<sup>c</sup>Employment status: 1: employed; 2: unemployed/retired  
<sup>d</sup>Socioeconomic status: 1: below average; 2: average; 3: above average  
<sup>e</sup>Place of living: 1: rural; 2: urban (up to 100,000 inhabitants); 3: urban (above 100,000 inhabitants)

mean anxiety scores were significantly higher in both non-operated ( $t(523) = 10.02, p < 0.0001$ ) and operated women ( $t(514) = 8.08, p < 0.0001$ ).

### Predictors of life satisfaction

Life satisfaction significantly correlated with some demographic variables (Table 2). Higher levels of life satisfaction were related to a higher education level, employment, a higher perceived socioeconomic level, and an urban place of living. Similar patterns of correlations were observed in both samples. Also, in both

**Table 3** Hierarchical regression analysis for testing predictors of life satisfaction in patients with urinary incontinence and patients operated for urinary incontinence

Predictors	Non-operated (N= 110)			Operated (N= 101)		
	$\beta$	B	SE B	$\beta$	B	SE B
<i>Step 1</i>						
Constant	–	65.53	8.25	–	64.63	9.23
Education level <sup>a</sup>	–0.09	–1.63	1.83	–0.02	–0.32	2.13
Employment status <sup>b</sup>	–0.19*	–5.13	2.45	–0.14	–3.94	2.96
Socioeconomic status <sup>c</sup>	0.39**	9.33	2.20	0.26*	6.13	2.54
Place of living <sup>d</sup>	0.13	1.87	1.34	0.09	1.32	1.51
–	$R^2 = 0.208$ $F(4, 105) = 6.91; p < 0.0001$			$R^2 = 0.110$ $F(4, 96) = 2.96; p = 0.0235$		
<i>Step 2</i>						
Constant	–	86.41	9.92	–	83.14	10.97
Education level <sup>a</sup>	–0.12	–2.14	1.75	–0.04	–0.70	2.06
Employment status <sup>b</sup>	–0.19*	–4.95	2.33	–0.13	–3.76	2.85
Socioeconomic status <sup>c</sup>	0.36**	8.57	2.10	0.27**	6.46	2.45
Place of living <sup>d</sup>	0.12	1.77	1.28	0.09	1.32	1.46
Anxiety (SAS)	–0.29**	–0.43	0.12	–0.27**	–0.46	0.16
–	$\Delta R^2 = 0.081^{**}$ $R^2 = 0.289$ $F(5, 104) = 8.47; p < 0.0001$			$\Delta R^2 = 0.071^{**}$ $R^2 = 0.181$ $F(5, 95) = 4.21; p = 0.0017$		

\* $p < 0.05$ , \*\* $p < 0.01$   
<sup>a</sup>Education level: 1: primary school; 2: secondary school; 3: college/university  
<sup>b</sup>Employment status: 1: employed; 2: unemployed/retired  
<sup>c</sup>Socioeconomic status: 1: below average; 2: average; 3: above average  
<sup>d</sup>Place of living: 1: rural; 2: urban (up to 100,000 inhabitants); 3: urban (above 100,000 inhabitants)

samples, a higher level of satisfaction was related to lower levels of anxiety.

Two hierarchical regression analyses (HRA) were performed with life satisfaction as a criterion variable in a sample of women with urinary incontinence and operated women (Table 3). Demographic variables that correlated significantly with life satisfaction were entered in the first step, including education level, employment status, socioeconomic status, and place of living. These variables accounted for a significant part of life satisfaction variance. However, these variables explained more variance in non-operated women than in operated women (20.8 vs. 11.0%). Moreover, while socioeconomic status was a significant predictor in both samples, employment status was a significant predictor only in non-operated women. Higher levels of socioeconomic status and employment significantly predicted higher levels of life satisfaction. Furthermore, in the second step of the HRA, the anxiety score was entered and explained an additional 7–8% of life satisfaction, where lower levels of anxiety predicted higher levels of life satisfaction.

## Discussion

Urinary incontinence (UI) is a debilitating condition which impairs different aspects of everyday and social functioning [2, 5, 6]. The main objective of this study

was to examine life satisfaction in patients with UI and patients who had undergone an operative procedure due to UI in relation to demographic variables, duration of UI, and anxiety. The main finding was that life satisfaction was impaired only in the sample of women who had undergone an operative procedure due to UI, while life satisfaction comparable to postmenopausal women was reported in women with UI. Also, life satisfaction was predicted by a higher perceived socioeconomic level and lower levels of anxiety. These results are further discussed in detail.

There is a bulk of previous studies showing that UI has many adverse effects on different aspect of quality of life [2, 4, 5, 8, 9]. However, previous studies mainly examined different dimensions of quality of life, with mental and physical dimensions, sexual functioning, and social and emotional functioning. Global life satisfaction, as the cognitive evaluation of one's life compared with personal standards and expectations [12, 13], was rarely addressed. This study showed that senior women with UI problems reported equal levels of life satisfaction to a comparable sample of postmenopausal women in Croatia [24]. This is an important notion, because it suggests that although life satisfaction may be related to quality of life [12] and general health [14], it does not necessarily need to be adversely affected by UI. The UI problems had been present for 6 years on average and in some women for up to 40 years (!), but the duration of the prob-

lems was not related to the life satisfaction. Thus, it may be that life satisfaction, as the global judgment of the overall life, is not merely a composite of different aspects of quality of life, but rather is qualitatively different. As life satisfaction implies acceptance of life circumstances [12], it may be that women accepted problems with UI and found effective ways of coping with it.

Moreover, life satisfaction was significantly lower in women who had undergone the operative procedure for UI, suggesting that those women had more serious symptoms before the operation that were not fully resolved by surgery and perhaps higher expectations. Still, given that this was not a prospective study and that the same sample of women was not examined before and after the procedure, we must be careful in drawing firm conclusions. However, the samples did not differ in any of the demographic variables, some of which were related to life satisfaction, which gives us confidence that the established differences may be due to the operative procedure.

We found several demographic variables to correlate with life satisfaction. More specifically, higher levels of life satisfaction in both samples were related to employment and a higher perceived socioeconomic level. It may be that employment and higher income were related to a higher socioeconomic level, which was, in turn, related to higher life satisfaction in these groups of women. It was also shown by the previous study in menopausal Korean women that employed women had higher levels of general wellbeing than unemployed women [7].

In our study, age was not related to life satisfaction in women with UI. This is somewhat unexpected, given that a previous study showed that younger women were more affected by IU [5]. However, the latter study included women who were on average 50 years old, while in our study, the participants were 12 years older, and less than one third were employed. Perhaps, in our older sample, other factors were more influential than age. Moreover, Temml et al. also found that age was not related to quality of life [4].

Furthermore, we found that after controlling for demographic variables, anxiety explained a significant part of life satisfaction variance above the demographics. More specifically, higher levels of anxiety in both samples predicted lower levels of life satisfaction. This is in line with some of the previous studies, where it was shown that poor mental health was associated with impaired life satisfaction both in general and in patient samples [15, 16]. Although the literature is still inconclusive regarding whether anxiety is a risk factor for UI or not [20], those UI patients with anxiety report more functional impairment. The etiology of the relationship between UI and anxiety is still not known. However, given that both serotonergic and noradrenergic pathways play roles in voiding and anxiety, it is speculated that this is responsible for the association between the two [18].

The primary limitation of the generalization of these results is the cross-sectional design of the study. Future studies would benefit from planning and conducting of prospective analyses regarding this subject, whose results will be very interesting for everyday practice and for the clinicians to decide which mode of treatment is optimal for every patient. Also, specific subtypes of UI or some other medical conditions were not taken into account in our research. There is an indication that different subtypes may have a differential role for the quality of life in elderly women [8] and urgency UI seems to place a greater burden on the quality of life than stress UI or overactive bladder symptoms [18].

As it was shown by previous study that objective measures of symptom intensity were not related to the perceived severity of the incontinence problems, but that it was the perceived severity that was associated with the quality of life [10], it is essential that the physician takes the patients' perspective into account. Moreover, given that the majority of women with UI do not seek help and do not report it to a physician [2], it is crucial for physicians to raise these issues in their everyday practice, especially with senior women.

**Author Contribution** Conceptualization: H. Soljačić Vraneš; methodology: S. Nakić Radoš, H. Soljačić Vraneš; formal analysis and investigation: S. Nakić Radoš, Z. Kraljević, H. Vraneš; writing—original draft preparation: S. Nakić Radoš, I. Djaković; writing—review and editing: H. Vraneš.

#### Declarations

**Conflict of interest** I. Djaković, H. Soljačić Vraneš, Z. Kraljević, S. Nakić Radoš, and H. Vraneš declare that they have no competing interests.

**Ethical standards** All procedures performed in studies involving human participants or on human tissue were in accordance with the ethical standards of the institutional and/or national research committee and with the 1975 Helsinki declaration and its later amendments or comparable ethical standards. The study was performed in Sestre Milosrdnice University Hospital Centre under supervision and approval of the hospital ethical board. Informed consent was obtained from all individual participants included in the study.

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