

MEASURING QUALITY IN PRIMARY HEALTHCARE - OPPORTUNITIES AND WEAKNESSES

MERJENJE KAKOVOSTI V PRIMARNEM ZDRAVSTVENEM VARSTVU - PRILOŽNOSTI IN SLABOSTI

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Editorial

ABSTRACT

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quality circles

The easy access to data from electronic patient records has made using this type of data in pay-for-performance systems increasingly common. General practitioners (GPs) throughout Europe oppose this for several reasons. Not all data can be used to derive good quality indicators and quality indicators can't reflect the broad scope of primary care. Qualities like person-centred care and continuity are particularly difficult to measure. The indicators urge doctors and nurses to spend too much time on the registration and administration of required data. However, quality indicators can be very useful as starting points for discussions about quality in primary care, with the purpose being to initiate, stimulate and support local improvement work. This led to The European Society for Quality and Patient Safety in General Practice (EQuiP) feeling the urge to clarify the different aspects of quality indicators by updating their statement on measuring quality in Primary Care. The statement has been endorsed by the Wonca Europe Council in 2018.

IZVLEČEK

Ključne besede:

primarno zdravstveno
varstvo, izboljševanje
kakovosti, kazalniki
kakovosti, zdravstvena
oskrba, mehanizmi
financiranja

Dostop do podatkov iz elektronskih zapisov o bolnikih je enostaven, zato se ti podatki vedno pogosteje uporabljajo kot podlaga za plačilo zdravnikov družinske medicine po uspešnosti. Ti po vsej Evropi temu iz več razlogov vedno odločneje nasprotujejo. Za vrednotenje kakovosti na osnovi kazalnikov ni mogoče uporabiti vseh podatkov, kazalniki kakovosti pa ne morejo odražati širokega obsega primarne oskrbe. Posebno težko je meriti lastnosti, kot sta oskrba, osredotočena na posameznika, in dolgotrajna oskrba. Registracija in upravljanje potrebnih podatkov namreč zdravstveno osebje časovno precej obremenijo. Vendar pa so kazalniki kakovosti lahko zelo koristni kot izhodišča za razprave o kakovosti v primarni zdravstveni oskrbi z namenom, da bi zasnovali, spodbudili in podprli izboljšanje kakovosti dela. Zato je Evropska skupina za kakovost in varnost pacientov v družinski medicini (EQuiP) objavila izjavo o merjenju kakovosti v primarni oskrbi. Leta 2018 jo je potrdilo tudi Evropsko združenje zdravnikov družinske medicine.

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1 INTRODUCTION

High quality primary care is essential for all stakeholders, e.g. patients, professionals and local and national healthcare authorities. The relatively easy access to data from electronic patient records, which can be combined with information collected from other sources, has made it common to use this type of data both for professional quality improvement and for payment systems like pay-for-performance (1).

In recent years, the use of quality indicators in pay-for-performance systems has increased (2, 3). General practitioners (GPs) throughout Europe oppose the use of quality indicators for pay-for-performance, since the core competences of GP care, like person-centred care, continuity of care or safe prescribing cannot be measured easily. Furthermore, the focus on indicators leads physicians and nurses to spend a substantial part of their time on registration and administration, instead of on the care for patients (4).

In response to this, the European Society for Quality and Patient Safety in General Practice/Family Medicine (EQuiP) decided to clarify the different aspects of quality indicators by developing a statement on measuring quality (5).

2 MAIN PRINCIPLES ON MEASURING QUALITY IN PRIMARY HEALTHCARE

The following principles concerning measurements of quality in primary healthcare should be taken into account when working with quality indicators: privacy and confidentiality, limitations of quality indicators, quality indicators as a useful tool for quality improvement, and administrative use.

2.1 Privacy and Confidentiality

Personal health data from patient records should always be used in a way that guarantees patients' privacy and confidentiality in the doctor-patient relationship (6).

2.2 Quality Indicators Have Limitations

Quality indicators reflect simplified measurable dimensions of more complex phenomena. Many of the goals and values in primary care can't be measured, e.g. ethics and humanism in consultations or if priorities are set right in everyday practice. Quality indicators are useful as starting points for discussions about complex reality as part of a process to initiate, stimulate and support local improvement work.

2.3 Quality Indicators Are Useful Tools for Quality Improvement

Primary care quality depends on each employee's competence, responsibility, initiative and sense of context. It is therefore important to support internal drivers for improvement. Quality development must be an integrated part of all primary care. GPs are urged to monitor systematically the quality of their own and their team's work as well as their working environment. The measurements should cover the different aspects of quality, e.g. patient centeredness, access to, equity in and content of care, process and clinical outcome measurements and work satisfaction of physicians and other personnel. Drilling down to individual patients for acting on care gaps should be possible for the GPs caring for the patients in the target population (7).

Comparisons with other primary care settings (benchmarking) can be useful, e.g. by using national quality indicators. Peer group education using benchmark data is a strong educational tool that enables for the discussion of outcomes in their own context between professionals. These comparisons can form the basis for a deeper analysis of reasons for differences in working methods and resource use.

Electronic health records should be developed so that it is easy to extract data for quality work on a local basis or, preferably, electronic health records and quality measurement tools should be integrated.

2.4 Administrative Use of Quality Indicators

Results of quality indicators should not be used as a basis for payment. Payment for quality (payment for performance) has not shown to be beneficial to patients. When payments are made for some aspects of the healthcare, these will be in focus, while other aspects than the measured tend to be ignored while internal motivation for good quality is declining (8).

External reporting should be performed in a way that does not identify individuals, i.e. in an aggregated form. External quality measurements should be limited to a reasonable number of indicators and should concentrate on the aspects of care that contribute most to better and safer patient care.

Data collection should not demand time, staff or financial investment beyond the benefits that may be attained in quality improvement and/or increased patient safety (9). Indicators that are used for any kind of external evaluation should be discussed and approved by health professionals before their use. Several confounding factors may impact more on results than quality in GP practices.

3 CONCLUSION

Quality indicators can be useful tools for quality improvement, e.g. in peer group education. However, when quality indicators are used to pay primary care providers in pay-for-performance systems, the limitations of indicators tend to end up in the foreground. Quality indicators only reflect simplified measurable dimensions of more complex phenomena. They can be useful as starting points for discussions about complex reality as part of a process to initiate, stimulate, educate and support local improvement work.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

This paper does not report on any study so ethical approval was not acquired.

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FREQUENCY OF COMPLETE AND REMOVABLE PARTIAL DENTURE TREATMENT IN THE PRIMARY HEALTH CENTRES IN THREE DIFFERENT REGIONS OF KOSOVO FROM 2002 TO 2013

POGOSTOST OSKRBE S TOTALNO IN DELNO PROTEZO V PRIMARNIH ZDRAVSTVENIH CENTRIH V TREH RAZLIČNIH REGIJAH NA KOSOVU V OBDOBJU 2002-2013

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ABSTRACT

Keywords:

edentulism, prosthodontic treatment, complete dentures, removable partial dentures

Introduction: Edentulism and prosthodontic care are very common, especially in the elderly. The study investigated the treatment with complete dentures (CDs) and acrylic removable partial dentures (ARPDs) among people receiving new prosthodontic treatment in the Primary Health Centres of the three regions in Kosovo from 2002 to 2013.

Methods: The data on ARPDs delivery and CDs delivery was obtained from the archives of primary health centres from three Kosovo regions (Prizren, Peje, Ferizaj) from 2002 to 2013. The data was analysed concerning year of treatment, type of dentures, jaw, age, gender and urban or rural origin of the patients. The trend of treatment was determined, and the binomial logistic regression model was used for predicting odds of ARPD versus CD treatment by year of treatment and patient characteristics.

Results: From 2002 to 2013, 9,478 patients received 11,655 CDs and 4,401 ARPDs. Delivery of CDs significantly increased by 57.45 dentures per year ($R^2=0.609$) and delivery of ARPDs by 30.39 dentures per year ($R^2=0.569$). Each year the odds for ARPD versus CD increased by 4.2% (95% CI: 3.0%-5.4%). Younger patients have higher odds for ARPD rather than CD and odds for ARPD are decreasing as the age of patients rises. The gender, residence, and jaw all had a significant impact on prosthodontic treatment too.

Conclusions: In Primary Health Centres of Kosovo, there is a trend for higher frequencies of both dentures (more obvious for ARPD), and the frequency is highly dependent on the age of patients.

IZVLEČEK

Ključne besede:

brezzobost, protetična oskrba, totalne proteze, delne proteze

Uvod: Brezzobost in protetična oskrba sta zelo pogosti, še zlasti pri starejših osebah. V študiji so preučevali zdravljenje s totalnimi in akrilatnimi delnimi protezami pri osebah, ki so v obdobju od 2002 do 2013 prejele novo protetično oskrbo v primarnih zdravstvenih centrih v treh regijah na Kosovu.

Metode: Iz arhivov primarnih zdravstvenih centrov na Kosovu (Prizren, Peje in Ferizaj) so bili iz obdobja od 2002 do 2013 zbrani podatki o vstavljenih novih totalnih in akrilatnih delnih protezah. Analizirani so bili glede na leto vstavitve, vrste protez, prisotnosti protez v zgornji in/ali spodnji čeljusti, starost, spol in prebivališče (mesto, podeželje) oskrbovancev. Od leta 2002 do 2013 so določili trend pogostosti oskrbe s protezama. Za napovedovanje verjetnosti oskrbe z delno protezo v primerjavi s totalno protezo glede na leto, ko je bila proteza vstavljena, in značilnosti bolnikov so uporabili binomsko logistično regresijo.

Rezultati: V študiji je bilo zajetih 9.478 bolnikov, ki so jim vstavili 11.655 totalnih protez in 4.401 akrilatnih delnih protez. Število vstavitvev totalnih protez se je v letih 2002-2013 pomembno povečevalo za 57,45 na leto ($R^2 = 0,609$), vstavitvev akrilatnih delnih protez pa za 30,39 na leto ($R^2 = 0,569$). Vsako leto se je obet za vstavitev akrilatne delne proteze glede na totalno protezo povečal za 4,2 % (95 %, CI: 3, 05, 4 %). Mlajši pacienti imajo večje obete za oskrbo z akrilatno delno protezo kot za oskrbo s totalno protezo. Verjetnost zdravljenja z akrilatno delno protezo se s staranjem zmanjšuje. Statistično značilen vpliv na protetično zdravljenje so imeli tudi spol in prebivališče pacientov ter lokacija proteze v ustih.

Sklepi: V primarnih zdravstvenih centrih na Kosovu se povečuje pogostost oskrbe z obema zobnima protezama (intenzivneje pri akrilatni delni protezi) in pogostost je močno odvisna od starosti pacientov.

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1 INTRODUCTION

Thanks to preventive dentistry, which was introduced in the mid-20th century, most people are now aware that natural teeth can be maintained throughout an entire lifetime (1-3). In developed countries, the prevalence and extent of tooth loss has significantly decreased in recent decades (1, 2, 4, 5). The prevalence of edentulism decreased by approximately 4-10% over ten years (1, 5, 6). However, the growing population of elderly, which will continue to grow dramatically in the next few decades, is the main reason for the persistence of high levels of edentulism (1, 7). Consequently, prosthodontic care is prevalent, especially in the elderly, in most European countries (8, 9). Correlations between the prevalence of edentulism and prosthodontic care as well as national prosperity, irregular-regular visits to the dentist, urban-rural residence, age, gender, and education were also demonstrated (1, 10).

The primary purpose of prosthodontic care is to replace missing teeth and to restore function and aesthetics, as well as to preserve the health of the remaining oral tissues of partially or completely edentulous patients. The prosthodontic treatment combines several clinical and laboratory procedures that lead to the insertion of the fixed (crowns and bridges) or removable (partial and complete dentures) prosthodontic device (11). In principle, because treatment with various types of removable dentures is generally less successful than with fixed prosthodontic devices, removable prosthodontic treatment is indicated when clinical or financial factors exclude fixed prosthodontic treatment on teeth or dental implants (12-14). In the last three decades, the removable dentures supported by dental implants have proven to be a very successful form of prosthodontic treatment for edentulous people and treatment with them is continuously increasing. However, due to increased complexity (needs surgery) and higher costs are significantly less common than conventional denture treatment without dental implants (15, 16).

Currently, conventional mucosa-born complete dentures (CDs) are still the most common removable form of prosthodontic treatment for complete edentulous jaws, while conventional mucosa and teeth-born removable partial dentures (RPDs) of all types continue to be a standard treatment modality in the maxillary and mandibular partial edentulous arches (17). The RPDs with a metal framework (MRPDs) and acrylic based RPDs without a metal framework (ARPDs) are the most commonly used removable partial dentures (8). More expensive and technically more demanding MRPDs have some crucial advantages over ARPDS. The main advantages are better dental support, oral tissue release from the extended resin plate coverage, and facilitated maintenance of hygiene, which impacts the higher success rate of MRPDs.

Mobility of abutment teeth and fracture of dentures are observed more often in ARPDS than in MRPDs (18, 19). A study among general dentists in Ireland showed that the average survival rate of an ARPD is 5.7 years, whereas an MRPD has an average survival rate of 10.6 years (20).

Data on prosthodontic care in different countries, environments, and patient groups can be relevant, in particular to all those who are involved in planning and organizing healthcare, as well as in health education (15, 21). Epidemiological studies published from 2004 to 2013 show that, of all RPDs constructed, the acrylic without metal framework ones were used in 3.2-75% of cases in different countries (17, 20, 22-24). A review study of 43 articles, which related to 13 European countries, concluded that there is a trend toward a higher prevalence of fixed prosthodontic treatments, more various types of RPDs and a reduction in CDs in most European countries. The majority of these articles presented the prevalence of various prosthodontic devices at a given time, and only five articles presented the incidence of newly used prosthodontic treatments over a specific period (8). A study performed in Croatia shows that Croatian Health Insurance has been covering the cost of CDs, ARPDS, and MRPDs for the past twenty years. At the same time, an upward trend particular to MRPDs has been detected in the majority of Croatian regions (25). Since 2013, the costs of MRPD treatment have been covered by health insurance in Slovenia as well (26). Subjective clinical estimations show an upward trend in the use of MRPDs since that date but, unfortunately, this has not yet been scientifically confirmed. Ever since the war in 1999, primary health centres in Kosovo only provide low-cost prosthodontic treatment, which means that edentulous persons are treated with either ARPDS or CDs. A considerable number of patients seek medical and dental services in these centres, and most of them are socially deprived, war veterans, relatives of war victims and older adults. Treatment with MRPD as a more advanced form of the removable partial dentures is only available in the state-funded University Clinical Centre in Pristina, Kosovo. In other institutions, the patients need to pay MRPD, like fixed restorations, by themselves.

No epidemiological studies have been made on the use of any prosthodontic treatment in the Republic of Kosovo. The purpose of the study was to investigate the treatment with CDs and ARPDS among people receiving prosthodontic treatment in the Primary Health Centres of the three regions in Kosovo. Therefore, the aims of this study were: 1) to find out what was the trend in the frequency of new treatments with CDs and ARPDS from 2002 to 2013; 2) to analyse the relationship between two prosthodontic treatments (ARPDs versus CDs) and according to different factors (age, sex, jaw, living environment); 3) to determine the proportion of the population receiving new CD and ARPD treatment at the annual level by age.

2 METHODS

This study included all patients who received new prosthodontic treatment with CDs and ARPDs at Primary Health Centres of three Kosovo regions: Prizren, Peje (Peč) and Ferizaj (Uroševac) from 2002 to 2013 (Table 1). 35.2% of the total data comes from Prizren, 37.2% from Peja, and 27.6% from Ferizaj. The data collected from the archives of primary health centres included: the year of delivery of the denture, the type of the denture delivered (CD or ARPD), the location of the denture in the patient's mouth (maxilla, mandible), the patient gender, the urban or rural origin of the patient, and the age of the patient upon denture delivery.

This study includes 9,478 patients who received treatment with CDs and ARPDs. 72.1% of patients live in urban areas and only 27.9% in rural areas. The participants were divided into 6 age groups as follows: younger than 35 years of age (1.9%), 35 to 44 years of age (8.9%), 45 to 54 years of age (21.8%), 55 to 64 years of age (26.0%), 65 to 74 years of age (30.8%) and more than 75 years of age (10.5%).

Table 1. The number of patients according to the number and type of dentures they received in prosthodontic treatment in the Primary Health Centres of the three regions of Kosovo from 2002 to 2013.

Patients	Dentures		
	CD	ARPD	Total
4,483	8,966		8,966
1,647	1,647		1,647
1,042	1,042	1,042	2,084
1,053		2,086	2,106
1,253		1,253	1,253
Σ9,478	Σ11,655	Σ4,401	Σ16,056

The obtained data was statistically analysed using SPSS 22.0 statistical package. The separate linear trends for CD and ARPD treatment were calculated. To draw inference from our data and to lose the outliers, we have normalized the data into a range of between zero and one. The absolute number, as well as the normalized values of the delivered CDs and ARPDs for each year of delivery, are presented in the graphs.

A prediction of ARPD treatment versus CD treatment in people receiving prosthodontic care from 2002 to 2013 was statistically analysed using binomial logistic regression. Sex, age, residence and denture location in the jaw were proposed as categorical covariates and the year of denture delivery as a continuous covariate. The adjusted

odds ratios (AORs) and 95% confidence interval (95% CI) are presented. For statistical significance, p-values <0.05 were considered.

To calculate the proportion of the population that is on an annual basis receiving new dentures in Public Health Centres, a four-year (2010-2013) average of patients who received CDs or ARPDs and population data from the last census were used. At the same time, patients and the population in all three investigated regions were arranged into six age groups (<35, 35-44, 45-54, 55-64, 65-74, 75+), in the age group 35+ and to all ages (total). The population for each age group was based on the data from the 2011 population census in the Republic of Kosovo (27). Of the 1,739,825 residents of Kosovo registered in the year 2011, the number living in Prizren, Peje, and Ferizaj was 382,841 (22% of the total number of residents in Kosovo) (Table 2).

Table 2. Population size in the three regions of Kosovo registered in 2011.

Age group	Prizren	Peje/Peč	Ferizaj/Uroševac	Total
<35	111,468	57,811	69,212	238,491
35-44	24,767	13,150	14,750	52,667
45-54	18,452	10,658	10,822	39,932
55-64	11,690	7,337	7,269	26,296
65-74	7,443	4,917	4,570	16,930
75+	3,961	2,577	1,987	8,525
Total	177,781	96,450	108,610	382,841

3 RESULTS

In the Primary Health Centres of all three regions of Kosovo, 9,478 patients received 16,056 removable dentures, of which 6,130 (64.7%) patients received only CDs, 2,306 (24.3%) patients received only ARPDs, and 1,042 (11.0%) patients received both CD and ARPD from 2002 to 2013.

The absolute number of the new treatments with CDs and ARPDs for each year of denture delivery, as well as the trends of the normalized frequencies of the treatment with CDs and ARPDs from the year 2002 to 2013, are presented (Figures 1 and 2). There is a significant upward trend line in the treatment with CDs: p=0.003, R²=0.609. On average, the absolute number of CD deliveries increase by 57.45 CDs per year. Results regarding ARPDs show that there is a significant rising trend in their delivery as well: p=0.005, R²=0.569. On average, the absolute number of ARPD deliveries increase by 30.39 per year. Although the average increase of the absolute number of CD deliveries is higher than the average increase of the

absolute number of the ARPD deliveries, the normalized data shows that the average number of ARPD deliveries increases more rapidly than the average number of CD deliveries. To further verify these findings, the odds for receiving ARPDS versus CDs - dependent on the years of delivery - were calculated.



Figure 1. The number of new treatments with CDs and ARPDS for each year of denture delivery in the Primary Health Centres of Kosovo.

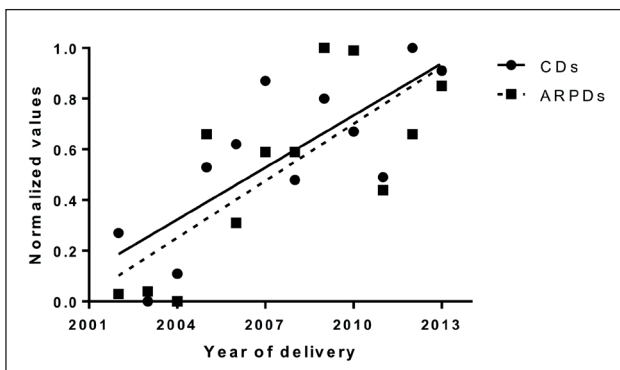


Figure 2. The linear trend of CD and ARPD delivery in three regions of Kosovo from 2002 to 2013.

To determine the effects of age, gender, residence and denture location on the likelihood of the type of the denture treatment among the patients, a binomial logistic regression model was conducted (Table 3). The model explained 14.7% (Nagelkerke R²) of the variance in the type of denture predicted and correctly classified 73.9% cases.

The results indicate that the year of delivery was statistically significant: $p < 0.05$. Each year the odds for treatment with ARPD versus CD increased by 4.2% (95% CI: 3.0%-5.4%). Males have 29.1% higher odds for treatment with ARPD rather than CD. In comparison with the reference group (older than 75) patients younger than 34 years have the highest odds for treatment with ARPD (AOR=13.935; 95% CI: 10.296-18.861) rather than CD and odds for ARPD are decreasing as the age of patients rises. Moreover, in comparison with the same reference group (older than 75) all compared age groups have higher odds for treatment regarding ARPD versus CD. Significant results were also found regarding the residence of the patients. Compared with patients from urban residence, patients from rural residence have 10.2% higher odds for treatment with ARPDS over CDs. Results indicate that it is more likely for patients to receive ARPD than CD treatment on the mandibula than maxilla (AOR=2.996; 95% CI: 2.778-3.231).

Table 3. Binominal logistic regression model predicting odds of ARPD versus CD treatment by year of receiving the treatment (2002-2013) and patient characteristics.

Observed category	Reference category	AOR (95% CI) ARPD to CD	p
Year of delivery			
2013	2002	1.042 (1.030-1.054)	0.001*
Sex			
[Male]	[Female]	1.291 (1.197-1.392)	0.001*
Age			
[<34 years]	[75+ years]	13.935 (10.296-18.861)	0.001*
[35-44 years]	[75+ years]	6.201 (5.181-7.422)	0.001*
[45-54 years]	[75+ years]	3.541 (3.031-4.137)	0.001*
[55-64 years]	[75+ years]	2.519 (2.163-2.934)	0.001*
[65-74 years]	[75+ years]	1.512 (1.299-1.759)	0.001*
Residence			
[Rural]	[Urban]	1.102 (1.008-1.205)	0.033*
Jaws			
[Mandibula]	[Maksila]	2.996 (2.778-3.231)	0.001*

*marks statistically significant differences ($p < 0.05$)

From 2010 to 2013, at an annual level, 0.18% of the total population in three Kosovo regions received a new CD and 0.09% a new ARPD in the Public Health Centres. In the 35+ year-old population, the proportion of the population treated with new CDs was 0.48% and 0.23% for new ARPDS. The proportion gradually increased with the increasing age of recipients of dentures up to the 75+ age group, and a decrease was detected in the 75+ age group (Figure 3).

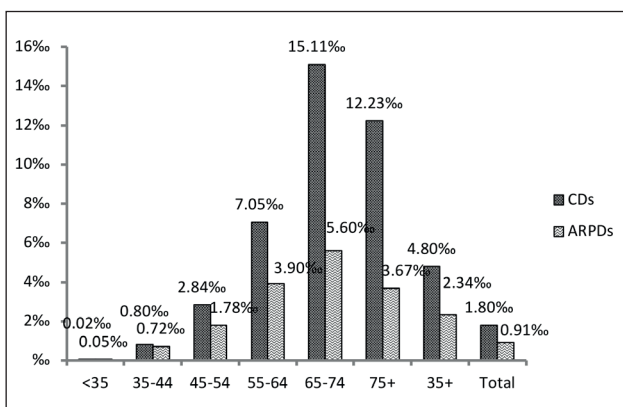


Figure 3. The distribution of the proportion of population treated with CDs and ARPDs from 2010 to 2013, at an annual level, by the age groups >35, 35-44, 45-54, 55-64, 75+, 35+ and in total.

4 DISCUSSION

In the primary health centres in the three Kosovo regions combined, where almost a quarter of Kosovo’s inhabitants live, treatment with CDs was more than twice as frequent as treatment with ARPDs over the entire period of 2002-2013. Among those who were seeking prosthodontic care in these centres, most of them are completely edentulous, and the most commonly used prosthodontic devices are CDs. In the same centres, the absolute number of removable prosthodontic treatments with both dentures rose continuously from 2002 to 2013. The increase in treatment with CDs was significantly higher (more than 27 treatments per year on average) than in the case of treatment with ARPDs. In most European countries, however, there has been a clear trend toward reducing removable prosthodontic devices, especially CDs (7-9). In contrast to our study, the frequency of treatment with CDs in Croatia was significantly lower than the frequency of treatment with RPDs from 1996 to 2002 (23). Similarly, the trend toward increasing the frequency of fixed prosthodontics devices and RPDs and the reduction of CDs has been identified in thirteen other European countries (8, 9). Unfortunately, these studies differ significantly concerning age, socioeconomic status, and origin of subjects as well as providers of dental care. Therefore, we can only compare trends, while a direct comparison of data is difficult. The data of our study is obtained from Primary Health Centres, where only primary dentists perform prosthodontic care. While the study in Croatia also includes institutions where specialists perform prosthodontic care. It should also be noted that in these centres dental care is provided to the most vulnerable groups of people in Kosovo. Given that edentulism is the main factor dictating the need for treatment with the CD

(7, 8), we can conclude that there is a high probability that the number of edentulous patients in the Primary Health Centres in Kosovo has also increased from 2002 to 2013.

The normalized frequencies of the treatment with CDs and ARPDs and, in particular, logistic regression predictions of ARPD treatment probability compared to CD by the year of treatment (2002-2013) reveals more interesting data on trends that were previously covered with high absolute values of CD treatment. The probability of ARPD deliveries versus CD significantly increases over the years, and CD deliveries decrease. A more detailed analysis revealed that, in the background of unfavourable absolute values of prosthodontic treatment trends, there is a slight drop in CD delivery in comparison with ARPD delivery, which is also reflected by a slight drop in edentulism. It is also more likely that ARPDs are more commonly used for the prosthodontic treatment of younger patients and, vice versa, that CDs are more often used than ARPDs for the prosthodontic treatment of the elderly. The prevalence of edentulism is most affected by the aging of the population (1, 7, 10). According to the Kosovo Agency of Statistics, the number of people aged 35 years and older increased by 25.0% between 1991 and 2011 (27). Our results also show that the aging of the population is one of the important factors that affects prosthodontic treatment, as the probability of CD treatment increased with the age of the patient. The proportion of ARPDs compared to CDs decreased with the age of patients and at the same time increased over the years. As the number of lost teeth increases with age, it is quite reasonable that, with the increasing age of patients, the CD and ARPD treatment ratio gradually tilts to the side of the CD, which is evident in our and many other studies (8, 28). However, aging is not the only factor affecting the frequency of edentulism and its treatment, since treatment with CDs increased by more than 100% in this same period.

In addition to the year of treatment and age of patients, many additional factors are described that have an impact on the frequency of prosthodontic care and edentulism (8, 9). The additional factors that were available to us in Primary Health Centres - gender, urban versus rural residence and mandibula versus maxilla as denture sites - have had a significant impact on prosthodontic treatment. Treatment with ARPD is more likely to occur in male subjects and people in a rural environment, and CD treatment is more likely in women and people from an urban environment. An appropriate explanation for the more likely deliveries of CDs in an urban environment is currently difficult to justify. Further investigation will be necessary to clarify this.

The results of this study lead us to conclude that CD treatments were significantly more likely in the maxilla than in the mandible and ARPD treatments were more likely in the mandibula. Similarly, studies in Western European countries have found a higher frequency of treatment with a removable partial denture in the mandible (29, 30).

The present study shows that the proportion of the population treated with CDs and ARPDs per year steadily increased from the <35 up to the 75+ age group and decreased in the 75+ age group. Similarly, findings from a study in Croatia indicate that the delivery of prosthodontic appliances in the oldest age group dropped significantly. A less frequent delivery of CDs to persons who are 75 years of age or older can be explained by the fact that older adults rarely visit a dentist, wear prostheses for a more extended period than younger persons, and replace old dentures with new ones less frequently (15, 21, 25, 28).

An important fact is that every prosthodontic treatment also has unwanted side effects and, especially if it is inadequate, harms oral health and tooth loss (29-32). In the contemporary planning of prosthodontic treatment, RPD is indicated when indications for fixed prosthodontic treatment on teeth or implants are ruled out due to biological or socioeconomic factors. It is therefore not surprising that RPD treatment generally has a lower survival rate, more complications and is less comfortable for the patient than fixed prosthodontic treatment (12-14, 32). According to our study, the Primary Health Centres in Kosovo have witnessed a continually growing trend of ARPD delivery in the period from 2002 to 2013. Furthermore, both the absolute number of ARPDs delivered and their proportion in comparison to CDs has increased. In Croatia, Slovenia and many developed countries, the proportion of RPDs in comparison to CDs has also been increasing, but mainly due to an increase in the proportion of MRPDs and a decrease in the proportion of ARPDs (8, 22, 25, 28). MRPDs have significantly better survival and success rate and, above all, improve the survival of the supporting teeth compared to ARPDs (14, 18-20). In the Primary Health Centres of Kosovo, only ARPDs are used for the treatment of partial edentulism. Consequently, although many individuals in these centres met the clinical criteria for a fixed prosthesis or even an MRPD, they were treated with ARPDs, even though these were less appropriate. Except at the University Clinical Centre in Priština, the patients themselves cover the cost of MRPD treatment, which is beyond the reach of most patients looking for dental care in the Primary Health Centres in Kosovo. Treatment with ARPDs can lead to rapid loss of remaining teeth and can increase the overall level of complete edentulism, thereby increasing the need for treatment with a CD (31, 32).

This study undoubtedly has certain limitations, mainly because the prevalence of edentulism was deduced from new dentures treatments. We must be aware that the real prevalence of edentulism in Kosovo is significantly higher than the proportion of new denture treatment. Namely, the data from Primary Health Centres included no information on how long individual patients wore dentures for. According to the population census in Kosovo (25), 61.7% of the population was living in rural areas in 2011. On the other hand, almost three-quarters of patients who received dentures in Primary Health Centres came from the urban environment, which leads us to conclude that only a small proportion of the rural population received dentures in these centres. This may either mean that people in rural areas had better oral health and had less edentulism or, more likely, that they visited a dentist less frequently, were edentulous and without dentures or were using dentures for a long time and rarely changed them. When interpreting the results of this study, it should be borne in mind that our investigated population represents the most vulnerable groups of people in Kosovo.

The number of preserved natural teeth and, indirectly, the presence of prosthodontic restorations is a significant indicator as well as a factor of oral and general health (8, 33). Data on the trend in the frequency of prosthodontic treatment can be important for developing national dental health services and dental health policy, as well as for dental school and research programs in Kosovo and the wider region. Sufficient dental centres that offer adequate care should be made available. In the case of prosthodontic care, this means that partial edentulism should be treated based on the professional indication, including with fixed prostheses and MRPDs, not only ARPDs. Considering the model of the neighbouring countries, the possibility of financing dental treatment, at least with MRPDs, could also be considered in Kosovo.

5 CONCLUSIONS

The trend in the frequency of new CD and ARPD treatment increased linearly from 2002 to 2013 in the Primary Health Centres in three regions of Kosovo. The need for CD treatment in absolute numbers is more than twice as high as the need for treatment with ARPD.

However, the proportion of ARPDs compared to CDs significantly increased over the years. Younger people have higher odds for treatment with ARPD and odds for ARPD are decreasing as the age of patients rises. Males have higher odds for treatment with ARPD. Patients from the rural environment have higher odds for treatment with ARPDs. CD treatments are more likely in the maxilla, and ARPD treatments are more likely in the mandibula.

In the period of 2010-2013, the proportion of the population treated with new CDs and ARPDs per year steadily increased from the <34 to 65-74 age group and decreased in the 75+ age group. 0.48% of the population older than 34 years of age received new CDs, and 0.23% received new ARPDs in these centres.

Professional guidelines for treatment should be taken into consideration as much as possible, to improve oral health in people who need prosthodontic care, while efforts should also be made to reduce the impact of disadvantaged socio-economic factors on treatment decision, especially in older individuals and others seeking dental care in Primary Health Centres in Kosovo.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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INDIVIDUAL AND CONTEXTUAL FACTORS OF NULLIPARAS' LEVELS OF DEPRESSION, ANXIETY AND FEAR OF CHILDBIRTH IN THE LAST TRIMESTER OF PREGNANCY: INTIMATE PARTNER ATTACHMENT A KEY FACTOR?

INDIVIDUALNI IN KONTEKSTUALNI DEJAVNIKI RAVNI DEPRESIJE, ANKSIOZNOSTI IN STRAHU PRED PORODOM PRVESNIC V ZADNJI TRETJINI NOSEČNOSTI: PARTNERSKA NAVEZANOST KOT KLJUČNI DEJAVNIK?

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ABSTRACT

Background: Depression, anxiety and fear of childbirth have numerous consequences for women and their developing offspring. Insecure attachment in close adult relationships is considered to be a risk factor for depressive symptoms. This study aims to gain further insight into the risk factors for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy regarding the main contextual relations, with an emphasis on partner attachment.

Keywords:

partner attachment,
depression, anxiety,
fear of childbirth,
nulliparas

Methods: A group of 325 nulliparas in the third trimester of pregnancy was enrolled in a childbirth preparation program. The following instruments were applied: Experiences in Close Relationships-Revised, the Edinburgh Depression Scale, the Zung Anxiety Scale, and a questionnaire regarding fear of childbirth. Three separate multiple linear regression models were built to explore the associations between demographic, social and attachment variables and mental health functioning.

Results: Highly educated nulliparas and those with a higher level of co-workers' emotional support experienced a lower level of anxiety when other predictors in the model were held constant. Of all the predictors in the model, only attachment anxiety and co-workers' support were statistically significantly associated with the level of depression. Attachment anxiety was significantly associated with all three mental health indicators (level of depression, anxiety and fear of childbirth).

Conclusions: The results suggest that intimate attachment anxiety could be a key contextual factor for mood and anxiety mental health functioning during the third trimester of pregnancy, accessible to change. Our results could facilitate the formulation of interventions for reducing antenatal depressive symptoms.

IZVLEČEK

Uvod: Depresija, anksioznost in strah pred porodom imajo številne posledice za nosečnice in razvijajoče se otroke. Ne-varne oblike navezanosti v intimnih partnerskih odnosih predstavljajo dejavnik tveganja za simptome depresije. Namen študije je bil poglobiti razumevanje dejavnikov tveganja za simptome depresije in anksioznosti prvesnic v tretjem trimesečju nosečnosti glede glavnih kontekstualnih odnosov, s poudarkom na partnerskem odnosu.

Ključne besede:

partnerska navezanost,
depresija, anksioznost,
strah pred porodom,
prvesnice

Metode: V študijo smo vključili 325 prvesnic, ki so obiskale Šolo za starše Ginekološke klinike v Ljubljani, v tretjem trimesečju nosečnosti. Uporabili smo naslednje inštrumente: ECR-R (Experience in Close Relationships - Revised), vprašalnik Zung (Zung's Self - rating Anxiety Scale), Edinburško lestvico depresije (Edinburgh Depression Scale EDS) in vprašalnik o strahu pred porodom. S tremi modeli linearne regresije smo analizirali povezave med demografskimi, socialnimi in navezovalnimi spremenljivkami in duševnim zdravjem.

Rezultati: Pri bolj izobraženih prvesnicah in tistih z višjo stopnjo čustvene podpore sodelavcev smo ugotavljali nižjo raven anksioznosti, medtem ko so ostali prediktorji v modelu ostajali konstantni. Od vseh prediktorjev v modelu sta bili le navezovalna anksioznost in čustvena podpora sodelavcev značilno povezani z nivojem depresije. Navezovalna anksioznost je bila pomembno povezana z vsemi tremi kazalci duševnega zdravja (nivojem depresije, anksioznosti in strahom pred porodom).

Zaključek: Rezultati nakazujejo, da je anksioznost v partnerskem navezovanju lahko ključni kontekstualni dejavnik za nastanek anksioznih in depresivnih simptomov in delovanje duševnega zdravja v tretjem trimesečju, ki je hkrati dostopen za modifikacijo. Naši rezultati bi lahko pripomogli k oblikovanju intervencij za zmanjševanje depresivnih simptomov pred porodom.

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1 INTRODUCTION

Mental health in the peripartum period is highly important for women and their developing offspring. While most studies focus on postpartum depression (PPD), in recent years it has been established that anxiety and depressive disorders in pregnancy represent risk factors for PPD (1). It is well established that 50% of PPD (mood and anxiety disorders) actually begins prior to delivery, and antepartum depression has even shown a higher prevalence than PPD in some studies (2, 3). Many women with peripartum depression suffer from comorbid anxiety and some studies have shown anxiety disorders during pregnancy to be a stronger predictor of PPD than depression (4, 5). Although a previous mood episode is the strongest risk factor for PPD, for a significant proportion of women PPD is the first mood episode in their lives (6). Therefore, identifying risk factors for mental health symptoms in first-time mothers is highly important. As several authors have noted, evidence on where to focus screening is still lacking (7).

Stress, anxiety, and depression during pregnancy are associated with alterations in foetal and infant neurobehavioral development (8-10) and with parenting stress (11), but often go unrecognized (12).

Fear of childbirth in relation to important mental health indicators in pregnancy has not been given much research attention. The presence of anxiety and depression during pregnancy increases the prevalence of fear of childbirth, which may then have a predictive value for PPD (13). However, Storksen has found that the majority of women suffering from fear of childbirth have neither anxiety nor depression (14).

A first pregnancy is to some extent a life transition and a period of increased emotional vulnerability (15). An intimate relationship and partner attachment represent an important part of the emotional experience in nulliparas (16). It has been observed that prototypical attachment patterns are similar in parents and children (17). However, it has been demonstrated that caregivers' capacity for attachment security is primarily under substantial environmental influence and limited genetic influence (18). An insecure attachment style in adults is thought to be based on less optimal experiences with early caregiving (19), despite many other multifactorial influences that can also affect the quality of bonding (20).

Insecure attachment in close adult relationships is considered to be a risk factor for depressive symptoms (21). However, relatively little research attention has been paid to the role of attachment during pregnancy itself. Some researchers have conceptualized the transition to parenthood as a general life stressor that activates

the attachment system. Predominant insecure schemas during pregnancy predispose some women to depressed and anxious states (22). A recent review concluded that pregnant women with insecure attachment styles are at a greater risk of PPD (23, 24). In a longitudinal study, Bifulco found that preoccupied and fearful adult attachment types significantly predicted the onset of PPD (22). However, whether maternal attachment styles influence the risk of postpartum symptoms directly or via covariation with other risk factors has not yet been explained (25).

The perceived social support within a social network can facilitate expectant first-time mothers' experiences of security related to childbirth and parenting (26). Maternal employment and strong social support, particularly non-partner support, are believed to be independently associated with fewer depressive symptoms (27). A supportive environment and feeling appreciated at work have been found to be important factors in working throughout pregnancy, and the working environment might have a favourable effect on women's health resources (28).

The aim of our study was to gain further insight into the risk factors for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy regarding the main demographic and important contextual and relational factors.

We hypothesized that for nulliparous women in the third trimester of pregnancy there would be a significant prediction of levels of anxiety (H1), depression (H2) and fear of childbirth (H3) scores by prediction variables (nulliparas' chosen individual and contextual factors).

2 MATERIALS AND METHODS

2.1 Study Sample

The participants consisted of a sample of 325 nulliparous women in the third trimester of pregnancy (>28 weeks of pregnancy). All participants were 18 years of age or older and recruited sequentially from parenting classes offered by the University Medical Centre (UMC) Ljubljana's Division of Gynaecology and Obstetrics from March to September 2014. The inclusion criteria were: first pregnancy, third trimester of pregnancy, at least 18 years of age. We used no other exclusion criteria. The demographic characteristics of the sample are listed in Table 1.

Table 1. Characteristics of nulliparas (results shown as frequency and percentages if not indicated differently).

	n=325
Mean age±SD	30.8±4.3
Mean years of education (n=321)	16.1±2.4
Mean weeks of pregnancy (n=324)	30.8±3.5)
Planned pregnancy (n=324)	270 (83.3)
Multigenerational household (n=323)	62 (19.2)
High emotional support from partner	295 (90.8)*
High support from parents (n=323)	248 (76.8)**
High support from friends	224 (68.9)***
High support from co-workers (n=310)	141 (45.5)****
Mean attachment avoidance score (n=294)	33.4±12.9
Mean attachment anxiety score (n=285)	32.4±13.6
Mean anxiety score (n=296)	33.7±5.9
Mean depression score (n=310)	6.1±4.2

* weak to moderate support 9.2%, strong support 19.1%, very strong support 71.7%

** weak to moderate support 23.1%, strong support 30.2%, very strong support 46.2%

*** weak to moderate support 31.1%, strong support 36.0%, very strong support 32.9%

**** weak to moderate support 52.0%, strong support 24.0%, very strong support 19.4%

2.2 Procedure

The study was conducted as a collaboration between obstetricians from UMC Ljubljana's Division of Gynaecology and Obstetrics and psychiatrists from the University Psychiatric Hospital Ljubljana. It was approved by the Republic of Slovenia National Medical Ethics Committee (NMEC) (protocol No. 92/12/13). All the study participants were given verbal and written explanations of the study and their informed consent was obtained prior to their participation in the study. The study was based on a convenience sample.

The questionnaires were administered during parenting classes from March 2014 to September 2014. The classes are run by midwives and include lectures by a paediatrician, an anaesthesiologist, a dentist, psychologists, and other specialists. The classes are open to pregnant women in their third trimester and are mostly attended by women in their first pregnancy; their partners are welcome to attend. Each class consists of 10 meetings over three weeks. The topics are preparation for labour, birth, and postnatal care of the baby.

The participants completed a structured questionnaire in their third trimester of pregnancy. Each participant was given an anonymous questionnaire with a code, which was saved together with their personal information for the possibility of further research. During the recruitment

period, the midwives and participant doctors invited 696 Slovenian-speaking, Caucasian pregnant women who attended the classes to participate. Written informed consent to participate was signed by 387 (55.6%) of the women. We excluded 38 of the participating women who were in their second or subsequent pregnancies, while another 24 were excluded due to missing data.

2.3 Measures/Instruments

2.3.1 Partner Attachment

Experiences in Close Relationships-Revised (ECR-R) (29): the ECR-R is a 36-item self-report measure used to assess adult romantic attachment on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale consists of two 18-item subscales: anxiety (fear of rejection and abandonment) and avoidance (discomfort with closeness and discomfort with depending on others). For our sample, internal consistency was $\alpha=0.84$ both for the Avoidance and the Anxiety scale.

2.3.2 Depressive Symptoms

The Edinburgh Depression Scale (EDS) (30): The EDS is a self-report questionnaire consisting of 10 items with four ordered response categories scored from 0 to 3. When used as a screening instrument, the cut-off scores of 12/13 usually designate major depression, whereas scores from 9 to 11 indicate mild depression levels in need of further assessment (31); Cronbach $\alpha=0.83$.

2.3.3 Anxiety

The Zung Anxiety Scale (32) consists of 20 items that test the participants' autonomic, motor, cognitive and other anxiety symptoms. For each item, the participants choose one of the following answers: a little of the time, some of the time, good part of the time, most of the time; Cronbach $\alpha=0.76$.

2.3.4 Fear of Childbirth

Fear of childbirth: a 6-item scale was constructed, three items describing different aspects of fear regarding childbirth connected with the mother's fear for herself. The items were rated on a 5-point scale from 1 (not at all) to 5 (very much). Exploratory factor analysis showed all six items loaded substantially (0.37-0.79) on a single factor. The validity of the questionnaire was assessed further by investigating correlations between general questions on a fear of childbirth (also measured on a 5-point scale) and questions describing specific fears associated with childbirth. Correlation coefficients varied between 0.24 and 0.64 and were all highly statistically significant ($p<0.001$). The strongest correlation existed between fear of pain during child delivery and general assessment of fear of childbirth. A single score as an average of six items

was calculated. There was a moderate and statistically significant correlation between the calculated score and a single item measuring general fear of childbirth ($r=0.65$; $p<0.001$). Furthermore, there was a statistically significant difference in mean score value between women that declared they feared childbirth and others ($p<0.001$). The mean (SD) score for those that stated they were afraid of childbirth was 2.7 (0.8) and 2.1 (0.8) for others. The scale exhibited high measurement reliability (Cronbach $\alpha=0.82$).

2.3.5 Sociodemographic and Pregnancy Information

A question battery designed by the research team included maternal age, years of education (education level), partnership status, work status, planned/unplanned pregnancy, living arrangement (shared household with elder generation/own household), how much emotional support from the partner, parents, friends, co-workers they were receiving.

2.4 Statistical Analysis

Three separate multiple linear regression models were built to explore the associations between demographic, social and attachment variables and mental health functioning in the third trimester of pregnancy. The latter was measured by the Zung anxiety score, the Edinburgh depression score and the fear of childbirth score. In each regression model, one indicator of mental health functioning was included as a dependent variable. The correlations among the three indicators of mental health were the following: fear of childbirth-anxiety ($r=0.37$; $p<0.001$) fear of childbirth-depression ($r=0.36$; $p<0.001$) and depression-anxiety ($r=0.66$; $p<0.001$).

Independent variables in each model were: maternal age; years of education; planned pregnancy (yes/no); shared household with elder generation (yes/no); emotional support from partner, parents, friends and co-workers (weak to moderate=almost none to moderate support/strong=strong and very strong support); attachment avoidance and attachment anxiety. There was no threat of multicollinearity as the highest variance inflation factor was 1.96.

Out of 325 women, 216 (66%) were included in multiple regression models due to missing data. No statistically significant differences in any of the continuous or categorical variables between missing and non-missing cases were found.

P-values <0.05 (two-tailed) were valued as statistically significant.

Data was analysed using SPSS version 24 for Windows.

3 RESULTS

3.1 Descriptive Data

Characteristics of nulliparas that were used in multiple linear regression models are summarized in Table 1.

Almost all of the participating women were married (97.2%) and employed (76.9% employed, 9.2% unemployed and 8.6% students).

3.2 Multiple Regression Models

The results of the three multiple regression models are summarized in Table 2. Highly educated nulliparas and those with a higher level of co-workers' emotional support experienced a lower level of anxiety during the last trimester of pregnancy, when other predictors in the model were held constant. On the other hand, nulliparas that lived in multigenerational households or had a higher level of attachment anxiety experienced a higher level of anxiety.

Of all the predictors in the model, only attachment anxiety and co-workers' support were statistically significantly associated with the level of depression. The level of depression was higher when nulliparas experienced higher attachment anxiety ($p<0.001$) and received weaker co-workers' emotional support ($p=0.04$).

Attachment anxiety played an important role also in experiencing fear of childbirth. Women with higher attachment anxiety were more afraid of childbirth. Interestingly, women that had planned their pregnancy also experienced a greater fear of childbirth in comparison to women with an unplanned pregnancy.

Table 2. Association between demographic, social and attachment variables and mental-health functioning during the last trimester of pregnancy.

	Anxiety score Std. B (p-value)	Depression score Std. B (p-value)	Fear of childbirth Std. B (p-value)
Age	-0.08 (0.166)	-0.04 (0.509)	-0.02 (0.727)
Years of education	-0.21 (<0.001)	-0.10 (0.091)	-0.05 (0.389)
Weeks of pregnancy	0.03 (0.586)	-0.08 (0.194)	-0.03 (0.664)
Planned pregnancy	-0.06 (0.347)	0.06 (0.374)	0.19 (0.005)
Multigenerational household	0.12 (0.038)	0.08 (0.172)	0.10 (0.100)
High emotional support from partner	0.05 (0.416)	0.02 (0.805)	0.12 (0.093)
High emotional support from parents	0.04 (0.481)	-0.04 (0.477)	0.06 (0.354)
High emotional support from friends	-0.11 (0.100)	-0.03 (0.708)	-0.02 (0.780)
High emotional support from co-workers	-0.21 (0.002)	-0.14 (0.044)	-0.11 (0.117)
Intimate attachment avoidance	-0.05 (0.552)	-0.01 (0.884)	0.10 (0.209)
Intimate attachment anxiety	0.40 (<0.001)	0.45 (<0.001)	0.32 (<0.001)

4 DISCUSSION

We explored various individual and contextual-relational factors that could confer increased risk for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy. Of all the predictors in the regression models, only attachment anxiety is associated with all three mental health indicators (level of depression, anxiety and fear of childbirth). The results suggest that intimate attachment anxiety could be a key contextual factor toward mood and anxiety mental-health functioning during the third trimester of pregnancy. Regarding emotional support from important social relations, only co-workers' emotional support was significantly associated with levels of depression and anxiety, as the participating women evaluated co-workers' emotional support as low to moderate in 52% of cases (contrary to other types of emotional support).

The results of our study confirm previous evidence that mood symptoms in pregnancy have a complex and multi-factorial aetiology. Studies have shown antenatal depression and anxiety to be more prevalent in women with a lower level of education (33, 34), which is in line with the results of our study. Namely, highly educated first-time pregnant women experienced significantly lower levels of anxiety.

Previous studies have also shown antenatal anxiety and depression to be more prevalent in unemployed women (3, 35). A vast majority of the participants in our study were employed. Our study showed that their mood level also depended on how well they could manage their relationships with co-workers and whether they experienced their pregnancy as a problem at work. Based on this, we could consider the cognitive dissonance of nulliparous women who wanted an active role in their

career/work, which is a particularly novel aspect. For highly educated women from our study, their career/work during pregnancy might be especially important for their mood level (which should be considered in clinical work). A recent meta-analysis found that the prevalence of perinatal depression is twice as high in women with an unintended pregnancy (36). However, in our sample the association between unplanned pregnancy and anxiety and depression levels was not significant. Interestingly, women who had planned their pregnancy reported a greater fear of childbirth. For the women in our sample, a way of understanding the role of planned or unplanned pregnancy regarding the fear of childbirth may be in the sense that not planning a pregnancy can mean a woman feels less of a need to control life situations or that she can go along with such situations to a greater extent, which can of course be either positive or negative depending on the context. According to our results, this element may also be linked to a woman's being more inclined to the new experience of childbirth.

Studies have found a lack of support, especially partner support, to be associated with antenatal depression and anxiety and perceived support and marital satisfaction to be beneficial for maternal mental health during pregnancy (5, 37). Our study showed higher anxiety scores in women who lived in a common household with their parents. The quality of attachment and a woman's relationship with her parents is an important risk factor for depression and anxiety during pregnancy (35). The absence of women's own positive caregiving experience can produce distressing feelings for first-time pregnant women who are developing their own maternal identity.

Living in a common household with parents can also generate more anxiety, especially in case there is a relatively new partner system, owing to a greater need

for adjustments. However, it could also provide more safety of a different type (e.g. instrumental support). It is possible for women who choose to live in such a context to be primarily more prone to a higher level of anxiety. Considering that in Slovenia (as in southern and eastern countries of the EU) multi-generational households were found to be a more common phenomenon than in most EU countries (38), it seems that multigenerational issues should be acknowledged in mental-health prevention of nulliparas.

However, it is the anxiety in partner-relationship attachment that seems to most universally differentiate mental-health functioning, regardless of the subtype of attachment style involved, which is in line with a recent study by Clout (39). In line with our study, Robakis found a highly significant correlation between antenatal depressive symptoms and attachment insecurity (24). Monk indicated that partner attachment makes a unique contribution when accounting for the risk of PPD beyond depression during pregnancy (40). Our study included a low-risk group of highly-educated nulliparas yet, even in our protected sample, partner-attachment anxiety was associated with higher levels of depressive and anxiety symptoms. This leads to the idea that it is important, especially for experts who deal with nulliparas' mental health, to understand nulliparas in view of these elements, which have so far not been linked in interviews.

5 LIMITATIONS

This study has some limitations. Most of the participating women in our study were highly educated first-time pregnant women living in an urban environment with seemingly protective psychosocial determinants (marital status, employment, a tendency for a secure attachment), which might not be representative of the Slovenian population and the results should probably not be generalized. Possible reasons for these limitations are the use of a university hospital for the study and the inclusion of Slovenian-speaking women only. However, even in this "protected" sample, attachment (style) modulated the mental health indicators.

When compared to other nulliparas who gave birth in UMC Ljubljana's Division of Gynaecology and Obstetrics in the year 2014, the women in our sample were more educated and slightly older. The mean years of education in our sample amounted to 16 years (higher education-university level), while 37.3% of nulliparas that gave birth in 2014 had 16 years of education (university level). The mean age of nulliparas that gave birth in 2014 was 29.35, compared to 30.9 years in our sample; 97.2% of women in our sample were married or living in a partner relationship, compared to 95.2% of nulliparas in 2014.

Our diagnostic assessment focused on mood symptoms, not disorders, and we limited psychometric assessment to the third trimester of pregnancy.

6 CONCLUSIONS

The results of this study show that intimate attachment anxiety in first-time pregnant women is likely to be associated with depressive and anxiety symptoms and experiencing fear of childbirth during the third trimester of pregnancy.

Our data provides new insights into the field of risk and protective factors for the mental health of women in their first pregnancy. Gaining knowledge of risk factors that influence the mental health of first-time pregnant women is also important for clinical work (assessment) and prevention in a time when non-pharmacological interventions are of ever greater importance. Additionally, intimate attachment could be more easily addressed and processed than other types of nulliparas' social relations because of the motivation of soon-to-be-parents. Investigators have even described positive results from interventions intended to alter attachment style (41).

In conclusion, besides the nature of partner attachment style, we should focus on primiparas' perception of the impact of their pregnancy on work relationships. Addressing eventual pregnancy discrimination in workplaces can be an especially complex issue that reaches far from clinical medical/psychological counselling interventions (42). However, incorporating questions about work relations into pregnancy questionnaires might also improve the recognition of vulnerable women.

Further studies of large, population-based samples of nulliparous women should be performed in order to replicate the results. We are also planning further research to conduct a long-term follow up.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

Received from the Republic of Slovenia National Medical Ethics Committee (NMEC) (protocol No. 92/12/13).

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EXPOSURE TO MENTAL LOAD AND PSYCHOSOCIAL RISKS IN KINDERGARTEN TEACHERS

IZPOSTAVLJENOST PSIHIČNEMU NAPORU IN PSIHOSOCIALNIM TVEGANJEM PRI VZGOJITELJIH V VRTCIH

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ABSTRACT

Keywords:

kindergarten teachers, questionnaire of psychosocial risks, occupational stress, psychosocial risks, workload

Introduction: Published research studies in Central Europe have been mostly oriented toward occupational stress among schoolteachers. The aim of this study is to investigate the level of occupational stress in kindergarten teachers and to specify psychosocial risks associated with their work.

Methods: The study was conducted by using a Meister questionnaire and a Psychosocial risk questionnaire. The data collection was obtained from kindergarten teachers in 2017. The survey link with request was sent to participants via email. A total 287 questionnaires from 67 kindergarten schools were collected.

Results: 192 (66.9%) teachers perceived their work as mentally burdensome. Teachers who perceived their work as mentally non-burdening were more likely to report autonomy in their work ($p=0.001$), fair performance evaluation ($p=0.010$), sufficient family time ($p=0.005$), a health-protected workplace ($p=0.000$) and absence of violence and bullying ($p=0.042$). Teachers with a university degree perceiving work as mentally burdensome reported that their work was not adequately assessed ($p=0.034$). Teachers over 45 years of age with school practice of over 20 years reported injustice in evaluating work performance against younger colleagues ($p=0.000$).

Conclusion: Kindergarten teachers reported overloading, time pressure, and high responsibility, but considered their work interesting. However, changing the way teachers work in schools can reduce teacher resignation and improve teachers' well-being.

IZVLEČEK

Ključne besede:

vzgojitelji v vrtcu, vprašalnik o psihosocialnih tveganjih, poklicni stres, psihosocialna tveganja, delovna obremenitev

Uvod: Objavljene raziskovalne študije v Srednji Evropi so bile večinoma usmerjene v poklicni stres med učitelji. Cilj te študije je bil raziskati stopnjo poklicnega stresa pri vzgojiteljih v vrtcih in določiti psihosocialna tveganja, povezana z njihovim delom.

Metode: Študija je bila izvedena z uporabo vprašalnika Meister in vprašalnika o psihosocialnih tveganjih. Podatki so bili zbrani od vzgojiteljev v letu 2017. Udeleženci so povezavo do ankete z zahtevo prejeli preko elektronske pošte. Zbranih je bilo 287 vprašalnikov iz 67 vrtcev.

Rezultati: 192 (66,9 %) vzgojiteljev razume svoje delo kot psihično obremenjujoče. Za vzgojitelje, ki svoje delo dojemajo kot psihično neobremenjujoče, je bolj verjetno, da bodo poročali o samostojnosti pri svojem delu ($p = 0,001$), pošteni oceni uspešnosti ($p = 0,010$), dovolj časa z družino ($p = 0,005$), varovanju zdravja na delovnem mestu ($p = 0,000$) ter odsotnosti nasilja in ustrahovanja ($p = 0,042$). Vzgojitelji z univerzitetno izobrazbo, ki dojemajo delo kot psihično obremenjujoče, so poročali, da njihovo delo ni bilo ustrezno ocenjeno ($p = 0,034$). Vzgojitelji, starejši od 45 let in z več kot 20 let prakse, so poročali o nepravilnosti pri ocenjevanju delovne uspešnosti v primerjavi z mlajšimi kolegi ($p = 0,000$).

Zaključek: Vzgojitelji v vrtcu so poročali o preobremenitvi, časovnem pritisku, visoki odgovornosti, vendar so menili, da je njihovo delo zanimivo. Vendar pa lahko s spremembo načina dela učiteljev v šolah zmanjšamo odpovedi učiteljev in izboljšamo njihovo počutje.

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1 INTRODUCTION

The evaluation and revealing of occupational stress has a crucial preventing role in securing health and safety in the workplace. Teaching is an occupation that high demands in terms of mental and emotional workload. Work-related stress in the education sector is on the rise due to higher job requirements and personal demands (1). Also, many unfavourable characteristics are linked to the teaching profession (e.g. a higher proportion of female, retired teachers; a lower percentage of graduates, who want to become teachers) (2). Teachers' mental health is affected by cumulative effects of stressors on micro (occur on daily basis, e.g. life-changing events, daily hassles) and macro level (occur at the level of social system above the individual). Therefore, exhaustion and overload in teachers predict a higher risk of burnout (3).

Teachers without the emotional resources to cope with job stressors have a poorer well-being with possible negative outcomes (e.g. fatigue, absenteeism, poor health or turnover) (4). Teacher stress has a strong research base, but many published studies have been strongly oriented toward primary and secondary school teachers. Unfortunately, there are very few studies in Slovakia regarding analysis of work-related stress among kindergarten teachers.

Long-term occupational stress is associated with a number of health issues (5); potential outcomes also include absenteeism from work and, thus, financial losses (6). Teaching is a helping profession that is associated with higher job demands for mental abilities, communication skills, and social interaction (7). Teachers' occupational stress is a worldwide phenomenon that includes various stress sources (8). Unattractiveness of the profession, feminisation of the teaching profession, low salary, and inappropriate working conditions are the most common problems the teaching profession in Slovakia faces. Issues with the distribution of work tasks, the demands of communication skills, increased emotional regulation and professionalism in all areas have resulted in a decrease of teacher numbers (9).

The aim of this article is to investigate the level of occupational stress in kindergarten teachers and to specify the psychosocial risks associated with their work.

2 METHODS

Accordingly, to the school database in Slovakia a total of 335 public, private and Catholic kindergartens and 2005 kindergarten teachers in the Žilina region were registered in 2017 (10). A cross-sectional epidemiological design of study was used. The survey was conducted by sending consent forms via email with a link requesting for the

questionnaires to be completed. Internet-based survey is a modern scientific methodology for health-related research that includes many advantages (e.g. gathering data, anonymity of respondents). The survey was anonymous, and attendance was optional. The survey invitation was randomly sent to every other kindergarten school. It was sent to 168 from a total of 335 kindergartens in the Žilina region. 49 kindergartens refused to participate due to personal reasons (e.g. kindergarten school reconstruction). In total, 67 kindergartens (56.3%) were interested in participating and completed questionnaires; 52 kindergartens school did not complete questionnaires. 297 completed questionnaires were received (287 women and 10 men). Considering only a few men are employed at kindergarten schools, we decided to include an analysis of women only. The data was obtained from March to October 2017. Selected socio-demographics characteristics included gender, age, education level achieved and years of experience. Perceived individual-level of occupational stress was assessed by a Meister questionnaire and a modified questionnaire of psychosocial risks. The Meister questionnaire provides mental load evaluation among discrepant occupations. A Slovak version of the questionnaire is validated and approved by the Slovak Ministry of Health (11). Modifications of the questionnaire were also adapted in Central European countries, e.g. in the Czech Republic and Poland (12, 13). Both versions were characterized by acceptable accuracy and internal consistency rates (Cronbach Alpha >0.77) (12, 14).

The Meister questionnaire determines three dimensions (subscales) of mental load (Overload, Monotony and Unspecific Load). Mental load consists of 10 closed items, including different characteristics of work (Time pressure, Low satisfaction, Great responsibility, Dull work, Problems and conflicts, Monotony, Nervousness, Oversaturation, Fatigue, Long-lasting load). A statistical evaluation of the results employs the calculation of the medians for items found to express the measure of agreement/disagreement on the 5-grade scale (1-5; "1 - strongly disagree"; "2 - mildly disagree"; "3 - neutral"; "4 - mildly agree"; "5 - strongly agree"). Results can be analysed based on an individual or group level. Median values of dimensions can be compared with normalized values proposed by Židková (14) (evaluation method is accessible on <https://zdenka-zidkova-psvz.webnode.cz/metody/>).

A psychosocial risks questionnaire was developed and approved by the National Institute of Public Health in Prague (NIPH) in 2012. The questionnaire consists of 10 close-ended questions with a dichotomous scale (yes/no). The Czech version is accessible on <http://www.szu.cz/tema/pracovni-prostredi/kampan-slic-psychosocialni-rizika-na-pracovisti?lang=1> (15). The survey tool was created due to the participation of the Czech Republic in the SLIC campaign conducted by EU-OSHA (16, 17).

Inspectors realized that surveillance at workplaces on a national level by using Psychosocial risks questionnaire. The questionnaire is in certification progress by NIPH in Prague. The Slovak version was characterized by acceptable reliability measured by split-half reliability (0.62). The internal consistency was 0.69, measured by Kuder-Richardson 20.

The average and median were calculated to make further comparison of our results with Meister population norms (14). Relative variables (%) were calculated to interpret psychosocial risks. Subsequently, according to teachers' perception of their own work (Meister questionnaire item: "My work is mentally so demanding that it probably can't be done for years with the same performance"), they were divided in two categories (mentally demanding; not mentally demanding). The general linear model (t-test) and non-linear (Chi-square test) were employed. Data analysis was performed by using SPSS-24; the results of all the tests were considered statistically significant whenever their p-value was lower than 0.05.

3 RESULTS

The sample size included 287 kindergarten teachers. The largest group of respondents was aged 45 and older (Table 1). Over 50% of kindergarten teachers reached higher education (n=161; 56.1%). Also, a substantial number of kindergarten teachers had twenty or more years of experience (n=147; 51.2%). A significant proportion of teachers with middle education were older than 45 years. In contrast, more teachers with higher education worked for less than 20 years.

A Meister individual analysis is shown in Table 2A and an evaluation of each question is shown in Table 2B. Results showed that 123 teachers (42.8%) reached the 3rd degree of workload, while 246 (85.7%) kindergarten teachers felt overloaded from work. According to Meister, the possibility of health consequences in this degree of load cannot be excluded. Table 2B shows that critical limits of medians were exceeded in overloading factor. Meister's analysis also demonstrates that kindergarten teachers negatively perceived lack of time, great responsibility, problems and conflicts at work and fatigue. Moreover, these sources of stress mostly caused them performance decrease and bad feelings about their work as well. Monotony of work and unspecific stress response were reported mostly positive, thus, it occurred in their work sporadically.

Table 1. Kindergarten teachers - demographic characteristics.

		Total (N=287) N (%)	Middle education (N=126) N (%)	Higher education (N=161) N (%)	p value
Age	<35 years	72 (25.1)	17 (13.5)	55 (34.2)	0.0001 ^a
	35 - 45 years	73 (25.4)	21 (16.7)	52 (32.3)	
	>45 years	142 (49.5)	88 (69.8)	54 (33.5)	
Years of experience	<20 years	140 (48.8)	33 (26.2)	107 (66.5)	0.0001 ^a
	>20 years	147 (51.2)	93 (73.8)	54 (33.5)	

^ap<0.05 (chi-square test)

Table 2. Meister questionnaire evaluation (Kindergarten teachers N=287).**Table 2A.** Individual items analysis - degree of workload.

Degree of workload	I. Overloading		II. Monotony		III. Unspecific load	
	N	%	N	%	N	%
0	41	14.3	283	98.6	250	87.1
1	57	19.9	3	1.0	25	8.7
2	66	23.0	1	0.4	6	2.1
3	123	42.8	0	0	6	2.1
Total	246	85.7	4	1.4	37	12.9

Table 2B. Values for the subscales.

Items	Mean	SD	Median	Critical limit ^a
I. Overloading				
Time pressure	3.4	1.1	4 ^b	3.0
Great responsibility	3.4	1.2	4 ^b	3.0
Problems and conflicts	3.2	1.3	4 ^b	2.5
II. Monotony				
Low satisfaction	2.4	1.2	2	2.5
Dull work	1.6	0.7	1	2.5
Monotony	1.6	0.7	1	2.5
III. Unspecific factor				
Nervousness	2.8	1.3	2	3.0
Oversaturation	2.8	1.4	2	3.0
Fatigue	3.5	1.2	4 ^b	3.0
Long-lasting load	3.6	1.1	4 ^b	2.5
Overall	2nd degree - overloading			

^a According to Židková (7); ^b denotes exceeded critical limit
Explanatory notes: SD - standard deviation;

Table 3 shows results from the Meister questionnaire analysis considering age, years of experience and education. Median values exceeded their critical limit for subscales, thus, the most problematic subscale turned out to be overloading. Statistical analysis revealed significant differences between age groups, years of experience

and education level in terms of analysed subscales. Kindergarten teachers (from groups: aged 45 and older; with 20 or more gained years of experience; with university degree) scored significantly higher in factors: overloading, unspecific factor, and also gross score.

Table 3. Descriptive statistics for the subscales of Meister questionnaire (N=287).

Women	I. Overloading			II. Monotony			III. Unspecific load			Gross score		
	mean	SD	C	mean	SD	C	mean	SD	C	mean	SD	C
Norm^c	8.4	3.2	10	7.6	3.0	9	11.7	4.4	14	25.0	8.1	29
total	10.0 ^a	2.7	11 ^b	5.6 ^a	2.0	7	12.7 ^a	3.8	14	28.4 ^a	7.1	32 ^b
Age												
<35 years	9.4 ^a	2.7	11 ^b	5.4 ^a	1.9	6	12.7	3.4	14	27.5 ^a	6.8	31 ^b
35 - 45 years	10.2 ^a	2.3	11 ^b	5.3 ^a	1.8	6	12.2	3.5	14	27.7 ^a	5.7	31 ^b
>45 years	10.3 ^a	2.9	12 ^b	5.8 ^a	2.1	7	13.1 ^a	4.2	15 ^b	29.1 ^a	7.7	33 ^b
Years of experience												
<20 years	9.9 ^a	2.5	11 ^b	5.4 ^a	1.8	6	12.6 ^a	3.5	14	27.8 ^a	6.3	31 ^b
>20 years	10.2 ^a	2.9	12 ^b	5.8 ^a	2.1	7	12.9 ^a	4.1	15 ^b	28.9 ^a	7.7	33 ^b
Education level												
middle	9.8 ^a	2.9	11 ^b	5.9 ^a	2.1	6	12.6 ^a	4.1	13	28.3 ^a	7.6	28
higher	10.2 ^a	2.6	12 ^b	5.3 ^a	1.8	6	12.8 ^a	3.6	15 ^b	28.4 ^a	6.6	32 ^b

^a p<0.05 (t-test); ^b exceeded critical value; ^c According to Židková (7);
Abbreviations: SD - standard deviation; C - critical limit

Descriptive statistics of psychosocial risk questionnaire items are shown in Table 4. Slovak kindergarten teachers generally considered their work as interesting (94.8%). They reported usage of their qualification and abilities (98.3%), autonomy in decision-making (84.0%), enough time for family (61.3%) and good relations with colleagues (81.9%). They felt the most frustrated about job performance evaluation (74.6%). They mostly reported good social support from employers (64.1%), safety hazards management in the workplace (58.5%) and awareness of protected health in the workplace (52.6%). Workplace mobbing and violence were noticed in 20.6% of kindergarten teachers.

We distributed the sample in two groups to assess how kindergarten teachers consider their work (as “mentally demanding” or “not mentally demanding”). A total of 48 respondents from the group “not mentally demanding (n=95)” had less than 20 years of experience. From the group “mentally demanding (n=192)” a total of 94 kindergarten teachers had less than 20 years of experience. Significant differences between groups were not observed (p=0.8057).

Significant statistical differences were noticed in half of the items (Table 4). Kindergarten teachers who considered their work as not mentally demanding more often reported autonomy in their job (p=0.0016). Also, they more often reported fair evaluation of working performance (p=0.0109), enough time for family (p=0.0057), protected health in the workplace (p=0.0002) and absence of violence and bullying (p=0.0427).

Table 4. Psychosocial risks questionnaire evaluation and comparison between groups (N=287).

Item	All teachers N= 287		Not mentally demanding N=95 (33.1%)		Mentally demanding N=192 (66.9%)		p value
	N (%)						
	yes	no	yes	no	yes	no	
Do you use your skills and abilities at work?	282 (98.3)	5 (1.7)	95 (100.0)	0	187 (97.4)	5 (2.6)	0.1126
Do you decide on your own how to do your job?	241 (84.0)	46 (16.0)	89 (93.7)	6 (6.3)	152 (79.2)	40 (20.8)	0.0016 ^a
Do you consider your job as interesting, which inspires you to continuing education?	272 (94.8)	15 (5.2)	92 (96.8)	3 (3.2)	180 (93.8)	12 (6.2)	0.2680
Is your job performance fairly evaluated?	73 (25.4)	214 (74.6)	33 (34.7)	62 (65.3)	40 (20.8)	152 (79.2)	0.0109 ^a
Do you have enough time for your family due to your work?	176 (61.3)	111 (38.7)	69 (72.6)	26 (27.4)	107 (55.7)	85 (44.3)	0.0057 ^a
Do you have good relationships and social support with your co-workers?	235 (81.9)	52 (18.1)	82 (86.3)	13 (13.7)	153 (79.7)	39 (20.3)	0.1701
Can you rely on social support from your employer?	184 (64.1)	103 (35.9)	68 (71.6)	27 (28.4)	116 (60.4)	76 (39.6)	0.0636
Does your employer manage all safety hazards in the workplace?	168 (58.5)	119 (41.5)	62 (65.3)	33 (34.7)	106 (55.2)	86 (44.8)	0.1037
Do you think your health is managed well enough and protected in the workplace?	151 (52.6)	136 (47.4)	65 (68.4)	30 (31.6)	86 (44.8)	106 (55.2)	0.0002 ^a
Does violence or bullying occur in your workplace?	59 (20.6)	228 (79.4)	13 (13.7)	82 (86.3)	46 (24.0)	146 (76.0)	0.0427 ^a

^a p<0.05 (chi-square test)

We aimed to examine whether there is some relationship between the perception of psychosocial load and age, educational level, and years of experience in kindergarten teachers who perceived work as “mentally demanding”. We performed a statistical analysis of variables by using chi-square test. The results of 3 items showed significant statistical differences (Table 5).

Kindergarten teachers with higher education stated more often that their job is not fairly evaluated ($p=0.0345$). Moreover, kindergarten teachers aged 45 and older and with more than 20 years of experience more often reported unfairness in job performance evaluation ($p=0.0008$; resp. $p=0.0021$). Older age, higher education and more years of experience turned out to be more associated with a negative perception, according to job performance evaluation.

However, older age and higher education of kindergarten teachers turned out to be associated with a perception of good social support from employers. Kindergarten teachers with higher education levels, aged >45 years, with less than 20 years of experience, showed statistically more social support from their employer ($p=0.0389$; resp. $p=0.0077$; resp. $p=0.0092$).

Table 5. Psychosocial risks questionnaire and comparison of demographic characteristics - kindergarten teachers' perception of work as “mentally demanding” (N=192).

Item	Do you consider your job as an interesting, which inspires you to continuing education?		p value	Is your job performance fairly evaluated?		p value	Can you rely on social support from your employer?		p value
				N (%)					
	yes	no	yes	no	yes	no			
Level of education									
middle	85 (44.3)	1 (0.5)	0.2587	12 (6.3)	74 (38.5)	0.0345 ^a	45 (23.4)	41 (21.4)	0.0389 ^a
higher	102 (53.1)	4 (2.1)		28 (14.6)	78 (40.6)		71 (37.0)	35 (18.2)	
Age									
<35 years	43 (22.4)	3 (1.6)	0.2528	12 (6.3)	34 (17.7)	0.0008 ^a	35 (18.2)	11 (5.7)	0.0077 ^a
35 - 45 years	50 (26.0)	0		18 (9.4)	32 (16.7)		33 (17.2)	17 (8.9)	
>45 years	94 (49.0)	2 (1.0)		10 (5.2)	86 (44.8)		48 (25.0)	48 (25.0)	
Years of experience									
<20	90 (46.9)	3 (1.6)	0.6001	28 (14.6)	65 (33.9)	0.0021 ^a	65 (33.9)	28 (14.6)	0.0092 ^a
>20	97 (50.5)	2 (1.0)		12 (6.3)	87 (45.3)		51 (26.6)	48 (25.0)	

^a $p<0.05$ (chi-square test)

4 DISCUSSION

The job of kindergarten teachers is affected by various factors and aspects of work. Kindergarten teachers are regularly exposed to emotional distress, resulting in emotion dysregulation and burnout (3, 18). The former research proved the higher risk of emotional dysregulation, exhaustion and anxiety among kindergarten teachers (19-22). We assumed that long-term exposure to occupational stress can also contribute to aggravated perception of workload. Recent articles have focused on teachers' burnout prevention and management of occupational stress in Slovakia. Author Piačková has shown that prevalence of burnout in kindergarten is significantly lower compared to other types of schools (23). However, a total of 28.7% teachers (n=104) were found to be at higher risk of burnout. Findings from a Croatian study have showed a potential risk of emotional exhaustion and burnout in 50% of teachers (n=100) (19). A similar pattern of results was obtained in Romania - almost half of kindergarten teachers from a sample (n=150) had a tendency to change profession due to emotional distress (24).

Our results showed exceeded critical values in time pressure, great responsibility problems and conflicts, fatigue and long-lasting load (Table 2B). These items turned out to be the most problematic and a potential source of frustration as well. Our findings were consistent with the results of an Italian study (25). Italian kindergarten teachers reported significantly higher values in questionnaires than VDU (Visual Display Unit) operators. Higher values were associated with work responsibilities, independence and autonomy in performing work-duties and other negative features of work interfering with psychophysical well-being (25). Our results also show comparable data to several Asian cross-sectional analyses (26, 27).

Psychosocial risks linked to the workplace are a significant source of occupational stress, like with other factors (e.g. mental, emotional and sensory load) (14). In addition, psychosocial risks include variables such as aspects of own work, social interaction and balancing work and family (14). According to the World Health Organization, psychosocial occupational stress can be divided into ten areas defining working conditions (character of work, pace, schedule, evaluation and control, working environment, level of communication, social interaction, role in company, professional investment, balancing work and family) (28). Teachers with fatigue are more likely to respond negatively to aspects of their own work, social interaction and balance between work and family (8). Respectively, our findings showed similar patterns. Kindergarten teachers who did not consider their work as mentally demanding are statistically more likely to respond to aspects of work positively and vice versa

(Table 4). Kindergarten teachers considering their work as mentally demanding more frequently reported lack of time for family ($p=0.0057$). They also more often reported unfair evaluation of working performance ($p=0.0109$). A German study of preschool teachers confirmed significant differences between the type of the centre and perception of job satisfaction. They explained that type of centre (public, private, run by churches) could be a potential factor explaining variations in educators' job satisfaction (29). Results from researchers in the USA showed correlation between teachers' satisfaction with working appraisal and improvements to pupil performance in school (30). Existence of appraisal or financial rewards at work encourages mental well-being, satisfaction with work and overall health as well (24). In contrast, unfairness in evaluation generates and intensifies emotional exhaustion (31).

We also found that mobbing or violence was reported by a total 20.5% of kindergarten teachers. Results from a European Working Conditions Survey showed that a total 48.7% of European teachers have experienced some form of mobbing and bullying. The survey was conducted among 261 European teachers using the Job-Demand-Resources instrument (JD-R model) (32).

In addition, teachers at several kindergartens did not recognize occupational stress at all. Moreover, they very often lack skills on how to cope effectively (adaptive or maladaptive coping) with stress. Consequently, maladaptive ways of coping (e.g. avoidance, escape, emotion-focused coping) are linked to psychological distress and viewing problems as recurrent. In contrast, adaptive coping (problem-focused coping, support seeking) may buffer the occupational stress (33).

Occupational stress is recognized as a key variable related to many socio-economic outcomes, e.g. sick leave, absenteeism or teacher attrition (teachers who voluntarily exit the profession) (34). Recent studies of teacher stress described a relation between negative affective response and perceptions of the balance between classroom demands and resources. Teachers perceiving sufficient resources to meet their demands were more likely to pursue becoming a teacher again (86.5%) or intending to remain in teaching (87.6%) (34).

As well as the possibilities to change working practice, stress management is also well described in literature. Courses for individuals, trainee programs for teachers (e.g. teaching soft skills) or rehearsing adaptive coping strategies can be very helpful (e.g. hobbies). The development of professional investment and management of competencies in teachers are significant aspects of social motivation (7, 20).

4.1 Limitations

We found a certain limitation to our study, e.g. small sample size; also, we did not focus on psychological factors associated with teachers' everyday experience, school system or policy climate issues. We also did not consider significant differences between groups according to ownership of kindergarten (public, run by churches, private).

5 CONCLUSIONS

Public health's focus is on exploring workplaces suffering from occupational stress and risks to health and safety. The research shows that teachers in kindergarten are exposed to various levels of occupational stress. Kindergarten teachers reported overloading, time stress, and high responsibility. Nevertheless, they considered their job as interesting, which motivates them to seek out professional development. Employer's strategy and policy has a crucial preventing role for employees suffering from occupational stress (35). We conclude that risk evaluation, control measures, and institutional changes should be realized at each school organisation. Some authors found low-quality evidence between organizational interventions and improvements in teacher well-being (36). However, changing the way that teachers work is organized at schools may reduce teacher resignations and may improve the teachers' quality of well-being.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest exist

FUNDING

There is no financial interest at risk.

ETHICAL APPROVAL

The kindergartens included in the research were randomly selected and sent the questionnaire. The questionnaire was anonymous and kindergarten staff could choose whether or not to participate in the research. The research carried no risk of violating ethical principles.

AUTHORS' CONTRIBUTION

All authors were involved in the development of the project, study design, data collection, and its interpretation. All authors contributed to the preparation of the manuscript and approved the final version of the text.

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IMPACT OF ADVERSE CHILDHOOD EXPERIENCES ON ALCOHOL USE IN EMERGING ADULTS IN MONTENEGRO AND ROMANIA

VPLIV NEUGODNIH IZKUŠENJ V OTROŠTVU NA UŽIVANJE ALKOHOLA PRI MLADIH IZ ČRNE GORE IN RUMUNIJE NA PREHODU IZ MLADOSTNIŠTVA V ODRASLOST

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ABSTRACT

Keywords:

adverse childhood experiences, alcohol use, prevention, South Eastern Europe

Background: Aiming at generating evidence for formulating targeted and cost-effective public health interventions for the effective control of alcohol use (AU) in emerging adults in South Eastern Europe. The study's objective was to assess if alcohol users experience adverse childhood experiences (ACE) more often than non-users, and to identify which ACE victims are the most vulnerable to AU.

Methods: The data was collected in 2010-2012 in two cross-sectional studies conducted in university settings in Montenegro and Romania (overall response rate 89.1%). In the present study, 3,283 students were included. The international ACE Study Questionnaires were used as a base for study instruments for collecting information on ACEs, health behaviours, and socio-economic factors. The association between AU and individual ACEs, adjusted to background factors, was assessed by using logistic regression.

Results: From the child maltreatment group, three ACEs were included in the final model as statistically significantly associated with AU, all of them from physical neglect/abuse types: frequently being hit so hard to have marks or being injured (OR=1.68; p=0.012), frequently being spanked (OR=1.38; p=0.012), and frequently having no person to take to the doctor if necessary (OR=0.58; p=0.031). From the household dysfunction group, two ACEs were included in the final model: exposure to mental health problems in the household (OR=2.85; p<0.001), and living with a problematic drinker/alcoholic (OR=1.51; p=0.019).

Conclusions: The effect of exposure to ACEs on AU persists into emerging adulthood. This should be considered when developing cost-effective response to AU burden through targeted interventions, in particular in settings with scarce resources.

IZVLEČEK

Ključne besede:

neugodne izkušnje v otroštvu, uživanje alkohola, preventiva, jugovzhodna Evropa

Ozadje: Z namenom priskrbeti dokaze za oblikovanje ciljanih stroškovno učinkovitih javnozdravstvenih ukrepov za nadzor nad uživanjem alkohola (UA) pri mladih na prehodu iz mladostništva v odraslost v jugovzhodni Evropi je bil cilj študije ugotoviti, katere žrtve neugodnih izkušenj v otroštvu (NIVO) so najbolj ranljive za UA.

Metode: Podatki so bili zbrani v letih 2010-2012 v dveh presečnih študijah, ki sta se izvajali v univerzitetnih okoljih v Črni gori in Romuniji. V študijo je bilo vključenih 3.283 študentov. Kot orodje sta bila uporabljena vprašalnika, temelječa na mednarodni raziskavi o NIVO. Z njima so bili zbrani podatki o NIVO, tveganih vedenjih in socio-ekonomskih dejavnikih. Stopnja povezanosti med UA in posameznimi NIVO je bila ob upoštevanju dejavnikov ozadja ocenjena z logistično regresijo.

Rezultati: V končni model so bile kot statistično pomembne vključene tri NIVO iz skupine trpinčenja otrok, vse iz skupine telesnega zanemarjanja/zlorabe: otrok je bil pogosto udarjen tako močno, da so bile vidne modrice/poškodbe (OR = 1,68; p = 0,012), pogosto šeskan (OR = 1,38; p = 0,012) in pogosto ni bilo osebe, ki bi ga odpeljala k zdravniku, če je bilo potrebno (OR = 0,58; p = 0,031). Vključeni sta bili tudi dve NIVO iz skupine disfunkcije gospodinjstva: izpostavljenost duševnim motnjam v gospodinjstvu (OR = 2,85; p < 0,001) in skupno bivanje z alkoholikom/osebo, ki je pogosto uživala alkohol (OR = 1,51; p = 0,019).

Zaključki: UA v obdobju prehoda iz mladostništva v obdobje odraslosti je očitno povezano z izpostavljenostjo NIVO. To je treba upoštevati pri razvoju stroškovno učinkovitega odziva na breme UA s ciljanimi ukrepi, zlasti v tistih okoljih, v katerih so viri omejeni.

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1 INTRODUCTION

Alcohol has been identified as a leading and one of the most harmful risk factors for global disease burden (1-3). Until recently, research has been focused on harmful alcohol use/abuse or early initiation of alcohol use/abuse. However, the recent work of the Global Burden of Disease (GBD) 2016 Alcohol Collaborators' Group has shown that use of alcohol at relatively low levels is not beneficial and, in fact, may be harmful even at levels considered today as moderate. Consequently, any alcohol use (AU) should be considered as harmful (4). Especially vulnerable to AU are adolescents and young people in transition to adulthood (5, 6).

Factors associated with AU are numerous and among them are included adverse childhood experiences (ACEs) (7-10). Evidence shows that AU is a common coping strategy adopted by ACEs victims to deal with the trauma (11), or to gain control over the negative experience (12).

In a special developmental stage, situated between late adolescence and adulthood (13) (young people aged 18-29), AU is frequently observed (14). The reason for this lies in the fact that, while addressing many development tasks, emerging adults tend to engage in risk-taking behaviours due to underdeveloped coping mechanisms, with AU being among them (13, 15). While a vulnerability to AU can be increased additionally in those with ACEs (16).

The biggest burden of AU is recorded in the European Region (3, 17). Within this region, in all the South Eastern Europe (SEE) countries with available data (Albania, Bosnia, Bulgaria, Croatia, Montenegro, Northern Macedonia, Romania, Serbia and Slovenia) alcohol per capita consumption (APC) in litres of pure alcohol (2015-2017 average, adjusted for tourist consumption) in males is well above the average APC in Europe as a whole (9.8 litres) (3). In Bulgaria, Romania, Serbia and Slovenia the APC is also above the European region average in terms of total population.

According to our knowledge, there were no studies yet to investigate the association between AU and ACEs in emerging adults in SEE countries in details yet. A better understanding of the ACEs underlying the risk for AU is critical for developing more effective prevention and early intervention measures in this part of Europe.

Aiming at generating evidence for formulating targeted and cost-effective public-health interventions for effective control of AU in emerging adults in the SEE region, the study objective was to assess if alcohol users experienced ACEs more often than non-users.

2 METHODS

2.1 Study Design, Study Population/Sampling, Timeframe

The data were collected in 2010-2012 from two cross-sectional studies conducted in Montenegro and Romania, as a result of their collaboration with the World Health Organization. In Montenegro 1600 (18) and in Romania 2500 (19) university students were invited to participate in the study, altogether 4100 students. In Montenegro, the sample was designed as a two-stage stratified sample. The units of the first stage were faculties, selected proportionate to the number of students enrolled in the first year in the academic year. The sample frame included 22 faculties of the University of Montenegro, two faculties of Mediterranean University and one of the Donja Gorica University. In total, 12 faculties were selected from the University of Montenegro, and all faculties from other two universities. The second-stage units were the first year students. The survey took into account gender structure of the participants (18). In Romania, the study sample was stratified according to development region and city type. The number of participants in each stratum was on the basis of the number of recorded students from the institutions from a specific city in a specific region. For each stratum, 1-2 institutions were selected. In the final sample four universities from North-West region, three from Bucharest, the Central, and North-East regions, two from West region, and one university from South-East and South-West regions were included. At each institution afterwards a random sample of bachelor and master programs participants was selected. The sample structure was compared to target population structure from national statistics (19). In the present study, only students belonging to the emerging adult population group were included.

2.2 Study Instrument

The international ACE Study Questionnaires (Family Health History Questionnaire, Health Appraisal Questionnaire) (20) were used as a base for study instruments (18, 19). Some variations have been introduced to the surveys to investigate more objectively the national contexts (18, 19), e.g. in Montenegro a special set of questions about the injury students might have had by the age of 18, disabling them from performing their usual activities, was added. The questionnaires contained separate questions for males and females. A piloting of the self-administered questionnaire was conducted to check whether respondents understood questions consistently, including their ability to provide meaningful answers (18, 19).

2.3 Observed Outcome

In Montenegro, the use of alcohol was assessed through a question "Have you ever drunk any alcohol in your life (other than a few sips)?" Answers were dichotomous (0=no, 1=yes). In Romania a question "Never drank alcohol?" was offered. For the purpose of analysis, all respondents who replied that they "never drank alcohol" were coded with 0=no, while all others with 1=yes. This resulted in a common observed outcome variable AU (0=no, 1=yes) in both countries.

2.4 Explanatory and Confounding Factors

As explanatory factors, different ACEs were considered. The child maltreatment group included five ACE types: physical neglect, physical abuse, emotional neglect, emotional abuse, sexual abuse, and within them thirteen ACEs. In the vast majority of them, frequent experience (very often or often) was of interest. The household dysfunction group also included five ACE types: experience of substances abuse in the household, experience of mental problems in the household, experience of violence against mother, held an incomplete family status in comparison to those coming from a complete family, experienced some kind of criminal behaviour in the household, and within them eleven ACEs. In the majority of them, only existence of experience was observed.

As confounders country, participants' gender and age group, and participants' parents' education level and employment status were considered.

2.5 Methods of Analysis

In both, univariate and multivariate analysis of association between AU and individual ACEs binary logistic regression was used: the direct method in univariate analysis and the stepwise method in multivariate analysis (Forward Selection Likelihood Ratio method - method with entry testing based on the significance of the score statistic, and removal testing based on the probability of a likelihood-ratio statistic based on the maximum partial likelihood estimates [21]). As confounders country (0=Romania, 1=Montenegro), participants' gender (0=males, 1=females) and age group (in years: 0=18-19, 1=20-21, 2=22-23, 3=24-29) and participants' parents' education level (0=no school or elementary/some high school, 1=completed high school, 2=some college or high school/university or more) and employment status (0=employed, 1=unemployed) were included. The dummy variables were created for categorical explanatory/confounding factors with more than two categories (the simple method was applied). A p-value ≤ 0.05 was considered significant in all statistical tests. The SPSS statistical software for Windows (Version 21.0; IBM Corp.; Armonk, NY, USA) (Licence: University of Ljubljana, Slovenia) was used as a tool for analysis.

3 RESULTS

3.1 Study Group Description

The overall response rate was 89.1% (3,653/4,100). It was higher in Montenegro (1,565/1,600; 97.8%) than in Romania (2,088/2,500; 83.5%). Among respondents, 3,283 (89.9%) were aged 18-29 years. In Table 1 their characteristics are presented.

The prevalence of an individual ACE is also presented in Table 1. In summary, in the child maltreatment group, the largest share of respondents (34.6%) reported physical abuse as they were frequently spanked. In the household dysfunction group, the largest number of respondents (17.2%) reported substance abuse in the household as they lived with a problematic drinker. A further extraction revealed that only 971/2,575 (37.7%) of participants didn't experience any ACE type during their childhood, while 62.3% experienced at least one in total (one ACE type: 29.4%; two ACE types: 15.8%; three ACE types: 8.4%; four or more ACE types: 8.7%).

Table 1. Selected socio-economic factors and adverse childhood experiences in students from Romania and Montenegro (n=3,283).

Factor group/factor	Category	N(%)
SOCIO-ECONOMIC FACTORS		
Gender	Females	1,899(57.8%)
	Males	1,384(42.2%)
Age (years)	18-19	1,167(35.5%)
	20-21	1,084(33.0%)
	22-23	666(20.3%)
	24-29	366(11.1%)
Mother's education	No school/elementary/some high school	620(19.0%)
	Completed high school	1,539(47.2%)
	Some college/high school/university or more	1,102(33.8%)
Father's education	No school/elementary/some high school	653(20.0%)
	Completed high school	1,362(41.8%)
	Some college/high school/university or more	1,246(38.2%)
Mother's employment status	Employed	2,363(73.2%)
	Unemployed	865(26.8%)
Father's employment status	Employed	2,688(85.5%)
	Unemployed	457(14.5%)
ADVERSE CHILDHOOD EXPERIENCES		
• CHILD MALTREATMENT GROUP EXPERIENCES		
Physical neglect experiences		
Frequently* didn't have enough to eat	Yes	99(3.1%)
Frequently had to wear dirty clothes	Yes	50(1.5%)
Frequently no person to take to the doctor if necessary	Yes	172(5.4%)
Physical abuse experiences		
Frequently being pushed, grabbed, etc., by somebody	Yes	104(3.4%)
Frequently being hit so hard to have marks or being injured	Yes	419(13.7%)
Frequently being spanked	Yes	1,120(34.6%)
Emotional neglect experiences		
Frequently felt not loved	Yes	163(5.1%)
Frequently parents wished had never been born	Yes	120(3.7%)
Frequently being hated by someone in the family	Yes	271(8.4%)
Emotional abuse experiences		
Frequently being sworn at, insulted, or put down	Yes	180(5.8%)
Frequently being afraid that might be physically hurt	Yes	114(3.7%)
Frequently being called "lazy" or "ugly"	Yes	280(8.7%)
Sexual abuse experiences		
Experienced an attempt of or actual sexual intercourse	Yes	128(4.4%)
• HOUSEHOLD DYSFUNCTION GROUP EXPERIENCES		
Substance abuse by household member experiences		
Lived with a problematic drinker or alcoholic	Yes	556(17.2%)
Lived with someone who used street drugs	Yes	93(2.9%)
Mental health problems of household member experiences		
Lived with somebody depressed or mentally ill	Yes	257(7.9%)
Experienced a suicide attempt in the household	Yes	133(4.1%)
Violence against mother experiences		
Frequently experienced pushing, grabbing, slapping mother, etc.	Yes	111(3.4%)
Frequently experienced kicking, biting, hitting mother	Yes	192(6.0%)
Frequently experienced repeated hitting of mother	Yes	236(7.4%)
Frequently experienced threatening mother	Yes	119(3.7%)
Family separation experiences		
Family status	Primary family complete	2,763(85.6%)
	Parents divorced, no new partners	286(8.9%)
	Parents divorced, stepfather	118(3.7%)
	Parents divorced, stepmother	26(0.8%)
	Parents divorced, stepfather and stepmother	14(0.4%)
	Foster family	20(0.6%)
Criminal behaviour by household member experiences		
Experienced an incarceration of household member	Yes	154(4.7%)
Experienced a commitment of a crime by household member	Yes	82(2.5%)

Table 2. Prevalence of alcohol use (as %), in students from Romania and Montenegro (n=3,283), along with results of univariate analysis of relationship between alcohol use and risk factors.

Factor	Category	Prevalence	OR (95% CI limits for OR)	p
ADVERSE CHILDHOOD EXPERIENCES				
• CHILD MALTREATMENT GROUP				
Physical neglect experiences				
Frequently* did not have enough to eat	No (RC)	78.9%		
	Yes	80.6%	1.12(0.67-1.85)	0.675
Frequently had to wear dirty clothes	No (RC)	78.7%		
	Yes	84.0%	1.42(0.66-3.04)	0.364
Frequently not present to take to the doctor if necessary	No (RC)	79.0%		
	Yes	76.0%	0.84(0.59-1.21)	0.350
Physical abuse experiences				
Frequently being pushed, grabbed, etc., by somebody	No (RC)	79.2%		
	Yes	90.2%	2.42(1.25-4.67)	0.009
Frequently being hit so hard to have marks or being injured	No (RC)	78.6%		
	Yes	86.0%	1.67(1.25-2.24)	0.001
Frequently being spanked	No (RC)	75.9%		
	Yes	84.3%	1.71(1.42-2.07)	<0.001
Emotional neglect experiences				
Frequently felt not loved	No (RC)	78.5%		
	Yes	83.2%	1.36(0.89-2.07)	0.157
Frequently parents wished had never been born	No (RC)	78.6%		
	Yes	82.4%	1.27(0.79-2.05)	0.326
Frequently being hated by someone in the family	No (RC)	78.1%		
	Yes	85.3%	1.63(1.15-2.32)	0.006
Emotional abuse experiences				
Frequently being sworn at, insulted, or put down	No (RC)	78.9%		
	Yes	88.1%	1.99(1.25-3.16)	0.004
Frequently being afraid that might be physically hurt	No (RC)	79.2%		
	Yes	90.2%	2.41(1.29-4.52)	0.006
Frequently being called "lazy" or "ugly"	No (RC)	78.3%		
	Yes	83.8%	1.43(1.03-1.99)	0.035
Sexual abuse experiences				
Experienced an attempt of or actual sexual intercourse	No (RC)	78.7%		
	Yes	85.0%	1.56(0.95-2.56)	0.080
• HOUSEHOLD DYSFUNCTION GROUP				
Substance abuse by household member				
Lived with a problematic drinker or alcoholic	No (RC)	77.2%		
	Yes	87.5%	2.06(1.57-2.69)	<0.001
Lived with someone who used street drugs	No (RC)	78.5%		
	Yes	88.0%	2.01(1.07-3.78)	0.031
Mental health problems of household member				
Lived with somebody depressed or mentally ill	No (RC)	77.9%		
	Yes	88.6%	2.21(1.48-3.28)	<0.001
Experienced a suicide attempt in the household	No (RC)	78.4%		
	Yes	87.0%	1.85(1.10-3.10)	0.020
Violence against mother				
Frequently experienced pushing, grabbing, slapping mother, etc.	No (RC)	78.4%		
	Yes	86.9%	1.83(1.04-3.23)	0.038
Frequently experienced kicking, biting, hitting mother	No (RC)	78.0%		
	Yes	88.7%	2.22(1.40-3.52)	0.001
Frequently experienced repeated hitting of mother	No (RC)	78.1%		
	Yes	85.3%	1.63(1.12-2.36)	0.011
Frequently experienced threatening mother	No (RC)	78.4%		
	Yes	88.8%	2.18(1.22-3.91)	0.009

Factor	Category	Prevalence	OR (95% CI limits for OR)	p
Family separation	Primary family complete (RC)	77.3%		
Family status	Parents divorced, no new partners	86.6%	1.91(1.34-2.71)	<0.001
	Parents divorced, stepfather	90.5%	2.81(1.50-5.26)	0.001
	Parents divorced, stepmother	84.0%	1.52(0.53-4.52)	0.427
	Parents divorced, stepfather and stepmother	85.7%	1.77(0.39-7.91)	0.458
	Foster family	75.0%	0.88(0.32-2.44)	0.810
Criminal behaviour by household member				
Experienced an incarceration of a household member	No (RC)	78.5%		
	Yes	84.2%	1.46(0.94-2.28)	0.094
Experienced a commitment of a crime by a household member	No (RC)	78.4%		
	Yes	91.4%	2.91(1.33-6.34)	0.007
CONFOUNDING FACTORS				
Country	Romania (RC)	86.6%		
	Montenegro	69.6%	0.35(0.30-0.42)	<0.001
Gender	Female (RC)	71.8%		
	Male	88.4%	2.98(2.45-3.62)	<0.001
Age (years)	18-19 (RC)	68.9%		
	20-21	83.1%	2.00(1.25-3.20)	0.004
	22-23	84.6%	2.10(1.26-3.52)	0.004
	24-29	87.2%	1.25(0.61-2.53)	0.541
Mother's education	No school or elementary/some high school (RC)	77.7%		
	Completed high school	76.9%	0.76(0.59-0.97)	0.029
	Some college or high school/university or more	82.1%	0.72(0.60-0.88)	0.001
Father's education	No school or elementary/some high school (RC)	79.2%		
	Completed high school	76.5%	0.90(0.71-1.14)	0.369
	Some college or high school/university or more	80.9%	0.77(0.63-0.93)	0.006
Mother's employment status	Employed (RC)	81.3%		
	Unemployed	72.1%	0.59(0.50-0.71)	<0.001
Father's employment status	Employed (RC)	78.7%		
	Unemployed	81.4%	1.19(0.92-1.53)	0.191

Legend: OR=odds ratio; CI=confidence interval; *=very often or often; RC=reference category

Table 3. Results of multiple stepwise logistic regression (Forward Selection Likelihood Ratio method) of relationship between use of alcohol and adverse childhood experiences adjusted to confounding factors in a sample of students from Romania and Montenegro (n=2,437).

Factor	Category	OR (95% CI limits for OR)	p
ADVERSE CHILDHOOD EXPERIENCES			
• CHILD MALTREATMENT GROUP			
Frequently no person to take to the doctor if necessary	No (RC)		
	Yes	0.58(0.35-0.95)	0.031
Frequently being hit so hard to have marks or being injured	No (RC)		
	Yes	1.68(1.12-2.52)	0.012
Frequently being spanked	No (RC)		
	Yes	1.38(1.07-1.77)	0.012
• HOUSEHOLD DYSFUNCTION GROUP			
Lived with a problematic drinker/alcoholic	No (RC)		
	Yes	1.51(1.07-2.13)	0.019
Lived with somebody depressed or mentally ill	No (RC)		
	Yes	2.85(1.59-5.10)	<0.001
CONFOUNDING FACTORS			
Country	Romania (RC)		
	Montenegro	0.25(0.20-0.32)	<0.001
Gender	Males (RC)		
	Females	0.28(0.22-0.36)	<0.001
Mother's education	No school/elementary/some high school (RC)		
	Completed high school	0.58(0.38-0.87)	0.009
	Some college/high school/university or more	0.74(0.56-0.99)	0.043
Father's education	No school/elementary/some high school (RC)		
	Completed high school	0.61(0.41-0.91)	0.015
	Some college/high school/university or more	0.87(0.66-1.15)	0.338
Mother's employment status	Employed (RC)		
	Unemployed	0.70(0.55-0.89)	0.003

Legend: OR=odds ratio; CI=confidence interval; *=very often or often; RC=reference category

3.2 Results of Univariate Analysis

The data on alcohol consumption was available from 3,221/3,283 (98.1%) respondents. Among them, 2,538 (78.7%) reported on AU. In ACEs victims, the prevalence of AU ranged from 75.0-91.4% (Table 2).

In the child maltreatment group of ACEs, the results of univariate analysis revealed the strongest association in terms of odds ratio (OR) in respondents frequently pushed, grabbed, etc., by somebody (OR=2.42[95% CI: 1.25-4.67]), almost the same as in those frequently being afraid that they might be physically hurt (OR=2.41[95% CI: 1.29-4.52]). In the household dysfunction group, OR was the highest in respondents living with a household member who committed a crime (OR=2.91[95% CI: 1.33-6.34]). Among confounders, the highest OR was observed between male and female respondents (OR=2.98[95% CI: 2.45-3.62]). All other results are presented in Table 2.

3.3 Results of Multivariate Analysis

All data necessary to perform multiple logistic regression analysis was present in 2,437/3,283 participants (74.2%). From the child maltreatment group, three ACEs were included in the final model, all of them from physical neglect/abuse types. The strongest association was recorded in respondents reporting no person to take to the doctor if necessary (OR=0.58[95% CI: 0.35-0.95]). Very similar was the OR in respondents frequently hit so hard to have marks or being injured (OR=1.68[95% CI: 1.12-2.52]). From the household dysfunction group, two ACEs were included. The strongest association was recorded in respondents who were living with somebody depressed or mentally ill (OR=2.85[95% CI: 1.59-5.10]). All other results are presented in Table 3.

4 DISCUSSION

The results of the present study show that among emerging adults in the observed countries the prevalence of key phenomena, AU and experiencing at least one ACE type during childhood, are both very common. The deeper insight into the relationship between them suggests that physical type of ACEs is more strongly associated with AU patterns than emotional type, since no ACE of emotional type were included in the multivariate model. Among household dysfunction factors, growing up in a home with alcohol abuse or mentally ill household members proved to be the only significant predictor of AU patterns.

A comparison of the results of our study to older research, which has only focused on harmful or early use of alcohol, was not easy. Nevertheless, we were able to make some comparisons. Finding that physical abuse is associated with AU is consistent with the study of Kauhanen et al., which stated that a punishing parenting style increased the risk of early AU as early as adolescence (8). Results from a US community survey indicated that physical punishment in teenage years significantly increased AU in adulthood (22). Shin et al. reported that physical abuse victims adopt maladaptive coping styles, including AU, when peer and social environments provide drinking opportunities for young victims who are poorly equipped over time to handle a variety of developmental challenges. Additionally, they claim that reduced social control and adoption of "adult" roles, both common in emerging adults, have the potential to increase AU problems (23). Surprisingly, frequent experience of no person to take to the doctor, if necessary, was included in the final model and even more, as a protective factor. This could be related to sense of coherence, the core construct of the Antonovsky's salutogenic model (24, 25). Children growing up in unfavourable environments, as long as the experiences are not heavily traumatizing, can also develop intrinsic coping mechanisms, strengthening their ability to resist some unhealthy behaviours, including AU. This hypothesis is supported by the results of studies in the past (25), as well as some newer studies, e.g. the study of Mendes Moutinho et al. (26).

As suggested by others, children's environments determine the development of health behaviours (27). As reported by Chartier et al., parents demonstrating negative role models are promoting poor health habits in their children (28). Greater susceptibility to AU in respondents who grow up with an alcoholic, is consistent with evidence on familial alcoholism as a strong risk factor for alcohol dependence (9, 29). It was reported by Bennett et al. that children of alcoholics are four- to five-times more likely to become alcoholics than other children, while biological children of alcoholics who are adopted to other homes have a two- to nine-fold increased risk of developing

alcoholism (30). Consequently, it should not be neglected that genetics may also play its role in the observed association (8, 9). However, some evidence suggests that a strong effect of early adversity on the risk of AU was independent of family history (31).

Among other important results, there are two key findings. Our finding that AU is more common among male ACE victims compared to females, which echoes evidence from previous research on gender differences in adult drinking patterns related to ACE exposure (32). However, the findings on the impact of gender on association between ACEs and AU seem to be inconsistent. One of the most rigorous longitudinal studies of ACEs (33) found that maltreatment during childhood was unrelated to men's alcohol use in early/middle adulthood, while female ACE victims were at significantly higher risk compared to non-victims. Other studies report that there were no gender differences in the effects of early child abuse on AU (34, 35). As suggested by Strine et al., it is possible that gender stereotypes describing men/boys as being resilient contributed to having much of the research to date examining the association between ACEs and problem drinking in females (32). Another important result of our study suggests that mother's unemployment could be a protective factor. It seems that unemployed mothers have better prospects for continuous parental monitoring, better opportunities to promote family attachment and/or prosocial involvement as a guard against externalizing problem behaviours (32).

The study has some potential limitations. First, only students were included in the study, which could mean that findings are hardly representative of the general population, but the similarity of the study findings to those of population-based studies suggests that findings are applicable in other settings as well (10, 36). However, one needs to be careful when interpreting them. On the other hand, the very carefully conducted process of sample selection in both countries allows for generalizing the findings to the overall student population in Montenegro and Romania, while very high response rates minimize different kinds of biases, including information bias (18, 19). It is not expected that a slight difference in sampling procedures and response rates between both countries would have any major influence on the conclusions. Next, the different cultural backgrounds of respondents - coming from one country historically belonging to the former USSR influence zone and the other being a former Yugoslav country - might be seen as a potential cause for differential reporting between the respondents. However, shared contemporary EU perspectives and the values of both countries relativize the potential of biased reporting in this regard. Next, respondents may have certain difficulty recalling ACEs, leading to an underestimate of their actual occurrence. However, the

young age of our respondents makes problems of recall bias less likely. Finally, while having similarities with a study recently published by Bellis et al. (37), we used a different methodology (individual ACEs and not only the number of ACEs were considered). The methodology could be additionally improved by the inclusion of potential interactions between countries and the other background variables; however, this extension of analysis was out of the scope of this study and should be addressed in further research.

On the other hand, the study has several strengths that draw important public health implications. The most important is that the present study builds on the latest evidence that any alcohol use is harmful (4). This sets a new perspective on public health measures for alcohol harm reduction - measures focused on decreasing population-level consumption through tackling the affordability and availability of alcohol should be prioritized. Next, the study provides a special message that some phenomena regarded as nearly ubiquitous (here AU) may partly be a result of other very common phenomena (here ACEs). This means that, e.g. by targeting healthcare professionals' attitudes toward domestic violence (38), the burden of ACEs could be reduced and, consequently, partly also the burden of AU. Thus, the presented evidence suggests that strategies for AU prevention and control should integrate interventions for managing early adversities, which is true not only for Montenegro and Romania, but also for other countries in transition with similar socio-economic and cultural conditions. As evidence from countries neighbouring Montenegro and Romania shows, a holistic approach is needed in addressing unhealthy behaviour in young people (39). On this basis, we can conclude that the study findings could be effectively used to orient policymakers in designing evidence-based responses to child maltreatment, targeting the population subgroups prone to harmful use of alcohol while ensuring the efficient use of scarce resources for prevention.

Further research in the field is needed. First, the extension of the present study in terms of assessing potential interactions between the two countries and the other key background variables would be necessary. Next, it would be interesting also to identify the high-risk-for-AU profiles, which would be targeted with focused and consequently more cost-effective prevention interventions. A similar approach has already been suggested in addressing suicidal behaviour (40). However, both extensions of analysis were out of the scope of this study. Finally, a similar study in the non-student part of the population of emerging adults would be of great importance, broadening the knowledge about the problem in this subgroup, although more difficult to reach than the student population (41).

5 CONCLUSION

It can be concluded that the effect of exposure to childhood adversities on AU persists into emerging adulthood. Along with the most recent views on the problem that AU, even at moderate levels, may be harmful, this should be considered when planning preventive measures for the reduction of AU in younger age groups. Keeping in mind these facts, the study provides guidance for developing a cost-effective response to the AU burden through targeted interventions, in particular in scarce resources settings.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ETHICAL APPROVAL

The study protocol was approved by the Ethical Committees of the respective countries (18, 19).

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A CROSS-SECTIONAL STUDY AMONG HEALTHCARE AND NON-HEALTHCARE STUDENTS IN SLOVENIA AND CROATIA ABOUT DO-NOT RESUSCITATE DECISION-MAKING

PRESEČNA RAZISKAVA MED SLOVENSKIMI IN HRVAŠKIMI ŠTUDENTI ZDRAVSTVENIH IN NEZDRAVSTVENIH VED O ODLOČITVAH ZA NEOŽIVLJANJE

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ABSTRACT

Objective: To survey university students on their views concerning the respect for autonomy of patients and the best interest of patients in relation to the withholding of resuscitation.

Keywords:

ethics, resuscitation, withholding, autonomy, best-interest, students, culture, religion, nationality

Methods: A cross-sectional survey among university students of medicine, nursing, philosophy, law and theology of the first and the final study years at the University of Ljubljana and the University of Zagreb was conducted during the academic year of 2016/2017. A questionnaire constructed by Janvier et al. presenting clinical case vignettes was used.

Results: The survey response rates for students in Ljubljana and Zagreb were 45.4% (512 students) and 37.9% (812 students), respectively. The results of our research show statistically significant differences in do-not resuscitate decisions in different cases between medical and non-medical students in both countries. Male and religious students in both countries have lower odds of respecting relatives' wishes for the withholding of resuscitation (odds ratio 0.49-0.54; 95% confidence interval). All students agreed that they would first resuscitate children if they had to prioritize among patients.

Conclusions: Our study clearly shows that gender, religious beliefs, and type of study are important factors associated with the decisions pertaining to the respect for autonomy, patient's best interest, and initiation or withholding of resuscitation.

IZVLEČEK

Namen: Preučiti mnenja študentov glede odločitev o avtonomiji pacientov in njihovi največji koristi z vidika odločati se za neoživljanje.

Gljučne besede:

etika, oživljanje, etika, oživljanje, neoživljanje, avtonomija, največja korist, študentje, kultura, religija, narodnost

Metode: Opravljena je bila presečna raziskava med študenti medicine, zdravstvene nege, filozofije, prava in teologije prvih in zadnjih letnikov študija univerz v Ljubljani in Zagrebu v akademskem letu 2016/2017. Vprašalnik je bil zasnovan na podlagi vprašalnika Janvier et al., ki so predstavili klinične primere v obliki vinjet.

Rezultati: Na raziskavo se je odzvalo 45,4 % (512) študentov v Ljubljani in 37,9 % (812) v Zagrebu. Rezultati naše raziskave so pokazali statistično pomembne razlike pri odločitvah za neoživljanje v različnih primerih med študenti zdravstvenih in nezdravstvenih fakultet obeh držav. Študentje moškega spola in verni študentje obeh držav imajo nižje obete po upoštevanju želje svojcev za neoživljanje pacienta (razmerje verjetnosti 0,49-0,54; 95-odstotni interval zaupanja). Vsi študentje so se strinjali, da bi pri oživljanju dali prednost otrokom, če bi morali izbirati med več pacienti hkrati.

Zaključki: Študijska smer, spol in versko prepričanje so glavni dejavniki, ki vplivajo na odločitve študentov o oživljanju, upoštevanju želje svojcev glede oživljanja, pacientovi avtonomiji in največjih koristih za pacienta.

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1 INTRODUCTION

In emergency situations, physicians sometimes have to make difficult decisions on whether or not to initiate emergency life-sustaining therapy. Usually the principle of the best interest of the patient is taken into account (1). In certain emergency situations, physicians can get guidance from family members and relatives (2, 3).

Janiver et al. performed a study among Canadian physicians and students in law, medicine, anthropology and bioethics on do-not resuscitate decision-making based on hypothetical clinical patients' case vignettes that they have constructed. The study's findings suggest that the resuscitation priority of patients is not closely related to the foreseeable survival of the patients and that the age of the patient has a strong influence on the decision-making (4). Similar findings were found in two consecutive studies carried out using the same methodology in Ireland among physicians and students of medicine and in Norway among paediatricians (5, 6). Sham et al. carried out a study in Hong Kong among medical and non-medical students (7). Tyer et al. carried out a qualitative study among physicians and medical students in the United Kingdom regarding factors that influence decisions about cardiopulmonary resuscitation. The factors that were found to be important were the patient's diagnosis, prognosis, age, quality of life, the opinions of physicians and other medical staff, and the wishes of patients and relevant others (8).

1.1 Aims of the Study

Our aim was to conduct a study among first-and final-year students from five different faculties at the University of Ljubljana, Slovenia, and the University of Zagreb, Croatia, using the questionnaire developed by Janiver et al. to find possible differences between variables, such as religious beliefs, gender and year of study, in do-not resuscitate decision-making related to patient's best interest and autonomy (4, 11).

1.2 Hypothesis

The hypothesis of the research was that there are differences among Croatian and Slovene students in do-not resuscitate decision-making in regard to the type of study, the year of the study, gender and religious beliefs.

2 METHODS

2.1 Participants

We conducted a cross-sectional survey among Slovenian and Croatian students of the first and final study years at the University of Ljubljana, Slovenia, and the University of Zagreb, Croatia. Students of five different faculties from both universities were included: Faculty of Medicine,

Faculty of Nursing, Faculty of Catholic Theology, Faculty of Law, and Faculty of Philosophy. In the academic year 2016/2017, a total of 1,128 students were enrolled in the selected study programs at the University of Ljubljana and 2,142 students at the University of Zagreb. Questionnaires were distributed to all students present at the specific lecture, which was the most visited lecture in each year of study, in agreement with professors from the faculties. We used the questionnaire that was previously used and validated by Janiver et al. (4, 11), which was anonymous and took on average 15-25 minutes to be completely filled in. The questionnaire was accompanied by text that explained the background and purpose of the study.

2.2 Data Collection

With the deans of the mentioned faculties, it was agreed that research could be carried out at their faculty during the classes of students of the first and last years of study. If students did not want to participate in the questionnaire, they returned it empty. Questionnaires were given out in a paper form (Appendix 1 and 2) by Jure Puc and Petra Obadić and were collected after the lecture in a paper box to ensure the anonymity of the survey. The survey was carried out during January 1, 2017 and May 5, 2017.

2.3 Questionnaire

The questionnaire depicts 8 hypothetical clinical cases involving different age groups of currently incompetent, critically-ill patients, all with potential neurologic sequelae (premature baby in the 24th week of gestation, new-born baby, 2-month old infant, 7-year-old boy, 13-year-old girl, 35-year-old adult, 50-year-old adult and 80-year-old elder patient). In all vignettes, the hypothetical patients arrived at the emergency department of a university health centre when a family member could not be immediately consulted. The patients' expected outcomes were described; gender or other social information such as marital status was not provided. The patients were presented in order from youngest to oldest. After each patient description, the same set of questions was asked: "Would you intubate, resuscitate, and consult intensive care for admission?" (for all cases); "If the parents asked you not to resuscitate, would you respect their decision?" (autonomy of the patient; for paediatric patient cases); "If the family asked you not to resuscitate, would you respect their decision?" (autonomy of the patient; adult patient cases); "Do you think that intubating, resuscitating, and consulting intensive care for admission is in the patient's best interest?" (all cases); "If it was your child and you had a few moments to consider, would you wish the physician to intubate, resuscitate, and consult intensive care for admission?" (for paediatric patient cases); "If it was your sibling's child, and you had time to think (not an emergency situation), and she or he asks for

your opinion, would you recommend that the physician intubate, resuscitate, and consult intensive care for admission?" (for paediatric patient cases); "If it was your partner, and you had to decide for him or her, would you wish the physician to intubate, resuscitate, and consult intensive care for admission?" (for adult patient cases); "If it was your brother or sister, and you had to decide for him or her, would you wish the physician to intubate, resuscitate, and consult intensive care for admission?" (for adult patient cases); "If this was you and you were able to decide, would you want the physician to intubate, resuscitate, and consult intensive care for admission?"

To each of the questions, the respondents could provide answers on the 4-point scale with the following answers "always", "usually", "rarely", and "never". Finally, participants ranked the patients in order of resuscitation priority if they presented simultaneously.

The questionnaire was translated from English to Slovenian and Croatian and again back from Croatian and Slovenian to English in order to find any inconsistencies in the understanding of the questions. We followed the recommendations for cross-cultural translation and adaptation (12-14).

Given that the questions in the questionnaire referred to hypothetical clinical cases, albeit based on real situations, and our survey included students from areas other than medicine and nursing, we tested comprehension of the questions by giving the questionnaire to 20 randomly chosen students from the abovementioned faculties prior to conducting our study.

2.4 Statistical Analysis

Categorical variables were described with frequencies and percentages. The measurement reliability of the six parts of the questionnaire, as measured by Cronbach's alpha, ranged from 0.84 to 0.94 in Slovenia and from 0.88 to 0.96 in Croatia. For the purpose of the analysis, four-point scale questions with possible answers "always", "usually", "rarely", and "never" were combined into two categories; "always" and "usually" were combined into one and "rarely" and "never" into the other category. The number of respondents varied by each question and the percentages were calculated with regard to the number of responses on a given question. As the amount of missing data per question was very low (<3%), it is not expected that the results would change substantially if all the respondents answered all the questions. Chi-square test was used to determine the association between two categorical variables. Multiple logistic regression analysis was used to investigate the association between several factors (country, university courses, year of study, gender and religion) and willingness to resuscitate each hypothetical clinical case. Due to multiple testing,

P-values<0.01 were considered as statistically significant. All statistical analyses were performed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, New York: IBM Corp. The licence belongs to the University of Maribor, Faculty of Criminal Justice and Security.

3 RESULTS

The response rates were 45.4% for the University of Ljubljana (512 students) and 37.9% for the University of Zagreb (812 students) (Table 1).

Table 1. Characteristics of students by country.

	Slovenia f (%)	Croatia f (%)	P
Gender			<0.001
Female	375 (75)	510 (62.8)	
Male	125 (25)	302 (37.2)	
Study			<0.001
Philosophy	29 (5.7)	66 (8.1)	
Medical	201 (39.3)	389 (47.9)	
Law	220 (43.0)	173 (21.3)	
Theology	30 (5.9)	102 (12.6)	
Nursing (Health Sciences)	32 (6.3)	82 (10.1)	
Year of study			0.055
First	318 (63.1)	469 (57.8)	
Final	186 (36.9)	343 (42.2)	
Education of father			<0.001
Basic or less	20 (4)	24 (2.9)	
High school	174 (34.6)	335 (41.3)	
Higher	68 (13.5)	91 (11.2)	
Bachelor	115 (22.9)	271 (33.4)	
Master's, PhD	126 (25)	91 (11.2)	
Education of mother			<0.001
Basic or less	18 (3.6)	44 (5.4)	
High school	134 (26.6)	335 (41.3)	
Higher	68 (13.5)	77 (9.5)	
Bachelor	152 (30.2)	277 (34.1)	
Master's, PHD	132 (26.2)	79 (9.7)	
Religion			<0.001
Atheist	228 (44.5)	124 (15.3)	
Religious	284 (55.5)	688 (84.7)	

3.1 The Age of a Patient and Decision not to Resuscitate

In Slovenia, there was a statistically significant difference between students of medical and nursing faculties when compared to other non-healthcare faculties (theology, law, philosophy) in the decision of resuscitating an extremely premature infant (P=0.006) and an 80-year-old patient (P=0.004). A higher share, 225 (97%) of students at medical and nursing faculties, decided to resuscitate a premature infant at 24-weeks of gestation, in comparison to students from non-healthcare faculties 254 (91%). In

the case of the 80-years-old patient, fewer students from the Slovenian medical and nursing faculties 194 (84.3%) would decide to resuscitate the patient compared to students from non-healthcare faculties 255 (92.4%). In Croatia, there was a statistically significant difference in decision-making for cases of a 2-month-old infant ($P=0.003$), a 7-year-old boy ($P=0.008$) and a 35-year-old adult ($P=0.009$). In all these cases, students from medical and nursing schools were more likely to resuscitate. Differences between the students in the first and final years of study were statistically significant only in the Slovenian sample ($P=0.004$) in the case of an 80-year-old patient. Compared to 289 (91.7%) of the first-year students, only 154 (83.2%) of the final-year students would opt for resuscitation in this case (Table 2).

Table 2. Decision of the students to resuscitate split by type of faculty (non-healthcare vs healthcare) and year of study in Slovenia and Croatia.

	Non-healthcare ^a f (%)	Healthcare ^b f (%)	P	First year ^c f (%)	Last year ^d f (%)	P
Premature of 24-weeks gestation old						
SLO	254 (91.0)	225 (97.0)	0.006	293 (92.4)	178 (95.7)	0.147
CRO	316 (92.7)	449 (95.3)	0.109	435 (92.8)	330 (96.2)	0.037
Mature new-born						
SLO	252 (91.3)	223 (96.5)	0.016	293 (92.7)	175 (95.1)	0.293
CRO	312 (91.5)	438 (93.0)	0.428	428 (91.3)	322 (93.9)	0.165
2-month-old boy						
SLO	265 (95.0)	226 (97.4)	0.158	303 (95.6)	180 (96.8)	0.509
CRO	321 (94.1)	462 (98.1)	0.003	449 (95.7)	334 (97.4)	0.213
7-year-old boy						
SLO	259 (93.2)	218 (95.6)	0.238	299 (94.3)	171 (94)	0.867
CRO	323 (94.7)	462 (98.1)	0.008	450 (95.9)	335 (97.7)	0.177
13-year-old girl						
SLO	255 (91.7)	214 (93.9)	0.359	297 (93.7)	165 (90.7)	0.213
CRO	312 (91.5)	448 (95.1)	0.038	432 (92.1)	328 (95.6)	0.043
35-year-old adult						
SLO	248 (89.5)	207 (91.2)	0.532	287 (90.8)	162 (89)	0.513
CRO	294 (86.2)	433 (91.9)	0.009	413 (88.1)	314 (91.5)	0.109
50-year-old adult						
SLO	263 (94.6)	214 (94.3)	0.871	300 (94.6)	171 (94.0)	0.750
CRO	316 (92.7)	452 (96.0)	0.041	436 (93.0)	332 (96.8)	0.017
80-year-old adult						
SLO	255 (92.4)	194 (84.3)	0.004	289 (91.7)	154 (83.2)	0.004
CRO	313 (91.8)	422 (89.6)	0.293	421 (89.8)	314 (91.5)	0.393

*f (%)—frequencies and percentages of positive answers; SLO=Slovenia; CRO=Croatia; n=number of respondents; p=probability tested by chi-square; non-healthcare-Faculties of Theology, Law, and Philosophy; Healthcare-Faculty of Medicine, and Faculty of Nursing or Health Sciences.

Multiple logistic regression model showed that religious students have higher odds (more than 2-folds) of resuscitating a mature new-born and a 2-month-old infant. Religious students had higher odds (from 1.35 to 1.80) of resuscitating patients in other age groups; however, the effect was statistically not significant.

3.2 The Respect of Parents' or Relatives' Wishes to Withhold Resuscitation - Autonomy of the Patient

In Slovenia, there was a statistically significant difference between the students of medical and nursing studies and the students of non-healthcare studies with respect to respecting the wishes of relatives to withhold resuscitation of an 80-year-old patient (P=0.007). In Croatia, a statistically significant difference with respect to withholding resuscitation was found between students of healthcare and non-healthcare studies in all presented cases. A lower share of final-year students of all studies, when compared to first-year students, would take parents' wishes into consideration in cases of 2-month-old infants (first year of the study 232 [49.5%], last year 134 [39.1%] [P=0.003]) and 7-year-old boy (first year 233 [49.7%], last year 138 [40.2%] [P=0.008]) (Figure 1).

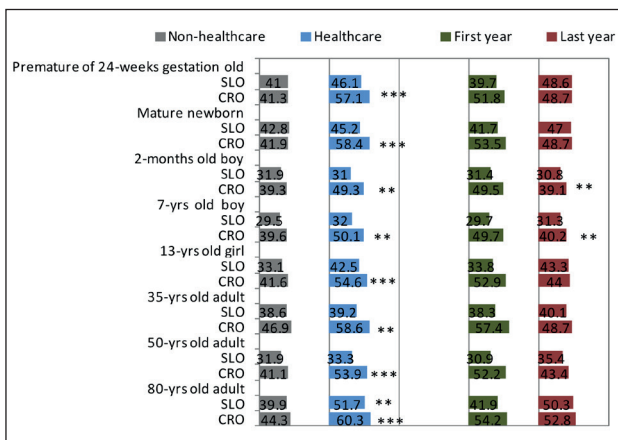


Figure 1. The shares of students who would respect the wish to withhold resuscitation split by the type of faculty (non-healthcare vs. healthcare) and year of the study (first vs. final year) in Slovenia and Croatia (**P<0.01;***P< 0.001; SLO=Slovenia; CRO=Croatia).

Multiple logistic regression analysis showed that the odds of respecting parents' or relatives' wishes to withhold resuscitation in male students were statistically significantly lower when compared to female students in all eight clinical cases (the odds ratio varies between 0.49 and 0.54). The same was true for religious students. The odds ratio varied between 0.68 and 0.83 and was statistically significant in premature, mature new-borns and close to significant in all other cases. Croatian students, when compared to their Slovenian peers, had higher odds of respecting parents' or relatives' wishes to withhold resuscitation in six clinical cases from 2-months-old onward, but are close to significant also in premature and new-born children (the odds ratio varies between 1.42 and 2.4) and the same was true for Croatian students

in medical and nursing faculties, when compared to students of non-healthcare faculties who show higher odds in relation to respecting parents' wishes in cases of a new-born child (OR=1.24-1.96; 95% CI: 1.22-3.16).

3.3 Best Interest of the Patient and Decisions to Resuscitate

In the case of an 80-year-old patient, statistically significant lower shares of Slovenian and Croatian students of medical and nursing faculties, compared to students of non-healthcare faculties, believed that resuscitation is in the best interest of the patient. However, in the case of a 2-month-old infant, a significantly higher number of Croatian final year students of healthcare and non-healthcare studies believed that resuscitation is in the best interest of the patient, when compared to Slovenian students (P=0.004) (Figure 2).

Multiple logistic regressions including gender, country, study year, study type, parents education and religion as independent variables, showed that students of healthcare faculties both in Croatia and Slovenia had statistically significantly lower odds when compared to students from non-healthcare faculties of believing that resuscitation is in the best interest of the 80-year-old patient (the odds ratio varies between 0.33 and 0.75; 95% CI: 1.16-2.95; p<0.001). This was true even in cases when the patient is a close (OR=0.41%; 95% CI: 0.25-0.66) or wider family member (OR=0.42; 95% CI: 0.26-0.69). Male and religious students had statistically significantly higher odds to demand to be resuscitated if in the position of adult patients (35-, 50-, and 80-years old) represented in the vignettes.

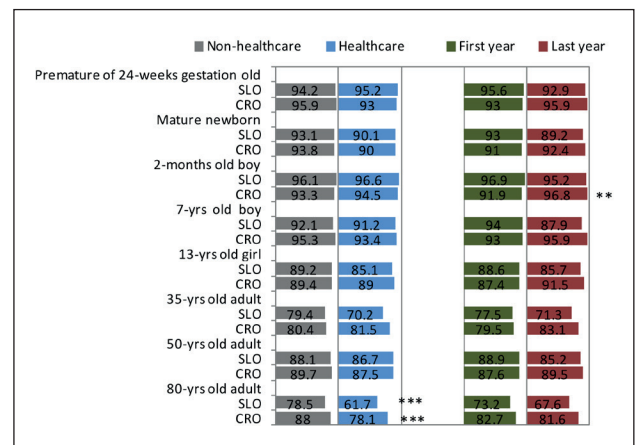


Figure 2. The shares of students who believe that resuscitation is in the patient's best interest by the type of faculty (non-healthcare vs. healthcare) and the year of the study in Slovenia and Croatia (**P<0.01;***P<0.001; SLO=Slovenia; CRO=Croatia).

3.4 Priority Order of Resuscitation

Both Slovenian and Croatian students would prioritize the resuscitation of children over adult patients (Table 3). The order of resuscitation among children varies among Slovenian and Croatian students.

Table 3. The number and share of surveyed students and their resuscitation priority ratings ("position") for the eight presented cases.

	SLO (n=489)	Position	CRO (n=812)	Position
Premature 24-weeks of gestation infant	96 (19.6)	3	232 (28.6)	2
Mature new-born	36 (7.4)	4	22 (2.7)	6
2-month-old infant	97 (19.8)	2	139 (17.1)	3
7-year-old boy	206 (42.1)	1	336 (41.4)	1
13-year-old girl	27 (5.5)	5	29 (3.6)	4
35-year-old adult	8 (1.6)	7	8 (1.0)	8
50-year-old adult	17 (3.5)	6	24 (3.0)	5
80-year-old adult.	2 (0.4)	8	22 (2.7)	7

4 DISCUSSION

Our study showed that there are differences among Croatian and Slovene students in do-not resuscitate decision-making with regards to type of study, gender and religious beliefs.

The results of our research show statistically significant differences in do-not resuscitate decisions in different cases between medical and non-medical students in Slovenia and Croatia. The study of Sham et al. found out that medical education and clinical exposure might influence the students' views on do-not resuscitate decisions. Medical students, especially those who were already in clinical praxis, tended to take into account a patient's proposal to not resuscitate more often, if this was their wish. Their study also showed that family wishes were considered less important to all participants. In contrast, findings in our study showed that healthcare students (51.7%) compared to non-healthcare students (39.9%) were more likely to respect relatives' wishes for resuscitation in all case scenarios (7). This tendency is especially pronounced in Croatian healthcare students, in comparison to non-healthcare students. However, Croatian final-year students would be less likely to accept relatives' wishes to withhold resuscitation in the cases of a 2-month-old baby and a 7-year-old boy. Richter et al. performed a study on how end-of-life decisions are influenced by cultural and socio-political circumstances and explored the compliance of doctors with patients in

Germany, Sweden and Russia. Russian physicians, unlike German and Swedish physicians, were less likely to respect a patient's family's wishes (15).

Religious students were more likely to resuscitate all patients from presented cases. Despite already finding differences in groups of new-borns comparing non-healthcare and healthcare faculties in terms of resuscitating (91.3-96.5% would resuscitate him), participants in our study did not devalue new-borns unlike the participants from Janiver et al., where only 79% would decide to resuscitate (4, 11, 16). They treated all patients, whether adult or child/young/infant patients equally. Religious and male students were also more likely to not respect parents' or relatives' wishes to withhold resuscitation and wanted to be resuscitated if ever found in the situation of adult patients depicted in the vignettes. Sham et al. did not find differences in decision-making amongst various religions and genders, but stated that further researches should be made on this topic (7). Donohue et al. studied the impact of neonatologists' religiosity and spirituality on healthcare delivery and found that physicians who reported that their religious beliefs influence their medical practice had similar responses in response as those not influenced by religion (17).

However, unlike the study of Sham et al. where final-year students had lower tendency compared to first-year students to resuscitate patients, Croatian and Slovenian medical and nursing students' attitudes toward resuscitation did not change between the first and final year of the study. Our findings prompt us to ask the question: has a formal medical curriculum at all helped healthcare students in Slovenia and Croatia in making decisions about resuscitation? Janiver et al. also found in their research that medical knowledge did not contribute to resuscitation decision-making, while Sham et al. suggest that clinical exposure during medical training is a key factor in DNR decision-making (4, 7, 11).

The resuscitation priority ratings differed in our sample, where participants gave the most value to a 7-year-old boy and premature infant and the least to 35- and 80-year-old patients, compared to the studies of Janiver et al, in which participants put in their first two places a 2-month-old baby and a 7-year-old boy, and their last two places a premature baby and an 80-year-old patient. Unlike the participants from Janiver et al., where the 24-week of gestation premature infant was among those patients that are more likely not to be resuscitated (4, 16), students of medical and nursing studies in Slovenia and Croatia were more likely to resuscitate a 24-weeks of gestation premature infant. In Croatia, medical students would also resuscitate more often than non-medical students in all patients from the presented cases except the 80-year-old patient. However, medical and nursing students in Croatia and Slovenia believe that resuscitation

is not in the best interest of the 80-year-old patient (368 [78.1%] of Croatian healthcare students in comparison to 300 [88%] students of non-healthcare studies; 142 [61.7%] Slovenian healthcare students in comparison to 215 [78.5%] students of non-healthcare studies). Among Slovenian students, this was the case even if the patient was a family member. As in the Janvier et al. Study, the age of the patient was a strong factor that influenced the do-not resuscitate decision-making of our respondents and the life of a child had higher value than the life of an adult. This tendency to resuscitate younger patients more often than an 80-year-old patient can also be seen in other studies which used the Janvier et al. questionnaire (2, 3). The review of Cook et al. and other studies also shows that age is an important determinant for the initiation of do-not resuscitate orders in critically-ill patients (18-20). According to our findings, students' decisions on the same clinical cases went along with their gender, religious beliefs, and type of study. We think that the practice of DNR should be always, when possible, discussed with the patient firstly and then with their relatives that know them and their wishes the best, to avoid biases made solely out of doctor's own thinking about what is the best for the patient. In addition to this, currently in Slovenia legislation about DNR is still in quite an unfledged state. Our study could serve as a helpful tool to improve it and, thus, make decisions in this medical field easier for doctors.

There are certain limitations with respect to the interpretation of the results. First, we did not include students from other faculties in other Slovenian and Croatian cities. By consequence, the results cannot be generalized to the population of all students. Second, we used hypothetical clinical scenarios which illustrate examples of clinical practice and, therefore, students' answers may not reflect the reactions that would happen in real-life circumstances, especially considering the socio-economic status of vignette-related patient cases and their outcome comparing various socio-economic situations. Third, the response rate of our study was less than 50%. Finally, an important caveat is that a young person, a student of a non-healthcare faculty, rarely faces an end-of-life or death decision and, consequently, those answers may not give the real picture.

5 CONCLUSIONS

Our study clearly shows that gender, religious beliefs, and type of study are important factors that are associated with the decisions pertaining to the respect for autonomy, patient's best interest, and initiation or withholding of resuscitation.

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CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

The study was approved by the Slovene National Medical Ethics Committee (Decision No. 0120-506/2016-2 KME 58/08/16); by the Ethics Committees at the School of Medicine at the University of Zagreb (No. 380-59-10106-16-20/290); the Faculty of Law at the University of Zagreb; the Faculty of Humanities and Social Sciences at the University of Zagreb; and the Catholic Faculty of Theology at the University of Zagreb.

PRESENTATIONS

This study was conducted as an international student's research work at the Faculty of Medicine University Ljubljana and School of Medicine University Zagreb in years 2016-2017.

This work was presented as a poster presentation at the 7th Slovenian Paediatric Congress held in Portorož, Slovenia, between 27th and 29th of November 2018.

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If the article/book has a DOI number, the author should include it at the end of the reference.

EXAMPLES FOR LITERATURE CITATION

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example for the chapter in a book:

2. Goldberg BW. Population-based health care. In: Taylor RB, editor. Family medicine. 5th ed. New York: Springer, 1999:32-6.

example for the article in a journal:

3. Florez H, Pan Q, Ackermann RT, Marrero DG, Barrett-Connor E, Delahanty L, et al. Impact of lifestyle intervention and metformin on health-related quality of life: the diabetes prevention program randomized trial. J Gen Intern Med. 2012;27:1594-601. doi: 10.1007/s11606-012-2122-5.

example for the article in a journal with no author given:

4. Anon. Early drinking said to increase alcoholism risk. Globe. 1998;2:8-10.

example for the article in a journal with organization as author:

5. Women's Concerns Study Group. Raising concerns about family history of breast cancer in primary care consultations: prospective, population based study. *Br Med J.* 2001;322:27-8.

example for the article from journal volume with supplement and with number:

6. de Villiers TJ. The role of menopausal hormone therapy in the management of osteoporosis. *Climacteric.* 2015; 18(Suppl 2):19-21. doi: 10.3109/13697137.2015.1099806.

example for the article from collection of scientific papers:

7. Hickner J, Barry HC, Ebell MH, Ettenhofer T, Eliot R, Sugden K, et al. Suicides and non-suicidal deaths in Slovenia: molecular genetic investigation. In: 9th European Symposium on Suicide and Suicidal Behaviour. Warwick: University of Oxford, 2002:76.

example for master theses, doctor theses:

8. Shaw EH. An exploration of the process of recovery from heroin dependence: doctoral thesis. Hull: University of Hull, 2011.

example for electronic sources:

9. EQ-5D, an instrument to describe and value health. Accessed January 24th, 2017 at: <https://euroqol.org/eq-5d-instruments/>.

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Type on the place in the text where they belong. Tables should be composed by lines and columns which intersect in fields. Number tables consecutively. Each table should be cited in the text and supplied with a brief title. Explain all the abbreviations and non-standard units in the table.

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Illustrations should be professionally drawn. When preparing the illustrations consider the black-and-white print. Illustration material should be prepared in black-and-white (not in color!). Surfaces should have no tone-fills, hatchings should be chosen instead (in case of bar-charts, so called pie-charts or maps). In linear graphs the individual lines should also be separated by various kinds of hatching or by different markers (triangles, asterisks ...), but not by color. Graphs should have white background (i. e. without background).

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Should be in accordance with International System of Units (SI).

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Avoid abbreviations, with the exception of internationally valid signs for units of measurement. Avoid abbreviations in the title and abstract. The full term for which an abbreviation stands should precede its first use in the text, abbreviation used in further text should be cited in parentheses.

EDITORIAL WORK

The received manuscript is submitted by the editor to three international professional reviewers. After the reviewing process, the contribution is sent to the author for approval and consideration of corrections. The final copy is then again submitted to the Editorial Office. The Editorial Office allows for a maximum of three revisions to be dealt with. If the third revision of the manuscript does not take into account all the comments of the reviewers, the manuscript will be withdrawn from the editorial process. During the editorial process, the secrecy of the contribution content is guaranteed. All the articles are language edited. Author receives in consideration also the first print, but at this stage corrigenda (printing errors) only are to be considered. Proofreading should be returned in three days, otherwise it is considered that the author has no remarks.

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NAVODILA AVTORJEM

Revija: **Zdravstveno varstvo (ZV) ISSN 0351-0026 (tiskana izdaja) / Slovenian Journal of Public Health (SJPH) ISSN 1854-2476 (elektronska izdaja)**

Navodila so v skladu z Uniform Requirements for Manuscripts Submitted to Biomedical Journals. Popolna navodila so objavljena v N Engl J Med 1997; 336: 309-15 in v Ann Intern Med 1997; 126: 36-47 in na spletni strani <http://www.icmje.org>.

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Uredništvo sprejema v obdelavo le članke s širšo mednarodno javnozdravstveno tematiko, ki še niso bili in ne bodo objavljeni drugje. Dele članka, ki so povzeti po drugi literaturi (predvsem slike in tabele), mora spremljati dovoljenje avtorja in založnika prispevka, da dovoli naši reviji reprodukcijo.

Oddan rokopis morajo prebrati vsi avtorji in se z njegovo vsebino strinjati.

Raziskave na ljudeh (vključno s človeškimi materiali in osebnimi podatki) morajo biti izpeljane v skladu s [Helsinško deklaracijo](#) in potrjene s strani nacionalne etične komisije. V izjavi na koncu rokopisa morajo avtorji podati izjavo o etiki raziskav na ljudeh, ki mora vsebovati ime etične komisije in referenčno števiko obravnave. Poročanje o raziskavah na ljudeh brez potrdila etične komisije zahteva dodatno razlago v poglavju o metodah dela. Na zahtevo Uredništva je avtor dolžan predložiti vso dokumentacijo o obravnavi raziskovalne etike njegovega rokopisa. Uredništvo si pridruže pravico, da kontaktira etično komisijo.

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CONFLICTS OF INTEREST (The authors declare that no conflicts of interest exist.)

FUNDING (The study was financed by ...)

ETHICAL APPROVAL (Received from the... ali opis etičnega vidika raziskave)

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Naslov, ključne besede in izvleček se oddajajo dvojezično v angleščini in slovenščini v strukturirana polja. Posebno polje za zapis v drugem jeziku obstaja le za izvleček, preostale podatke vnesite v obeh jezikih v ustrezno isto polje. Prvi izvleček je vselej v angleškem jeziku (do 250 besed - sistem vam besede sproti šteje), drugi pa v slovenskem jeziku (razširjen izvleček - do 400 besed).

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Besedila naj bodo napisana z urejevalnikom Word for Windows 97-2003. Robovi naj bodo široki najmanj 25 mm. Znanstveni članki naj imajo naslednja poglavja: uvod, metode, rezultati, razpravljanje in zaključek. Uvodniki in sistematični pregledni članki so lahko zasnovani drugače, vendar naj bo razdelitev na poglavja in podpoglavja jasno razvidna iz velikosti črk naslovov. Poglavja in podpoglavja naj bodo številčena dekadno po standardu SIST ISO 2145 in SIST ISO 690 (npr. 1, 1.1, 1.1.1 itd.).

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Zahtevana dolžina prispevka je za vabljen uvodnik od 250 do 1000 besed, za znanstveni članek (originalni, metodološki ali sistematični pregledni) pa od 2000 do 4500 besed s slikovnim gradivom in literaturo vred. Revizija sme obsegati 5000 besed.

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Naslov v angleškem in slovenskem jeziku naj bo kratek in natančen, opisen in ne trdilen (povedi v naslovih niso dopustne). Navedena naj bodo imena piscev z natančnimi akademskimi in strokovnimi naslovi ter popoln naslov ustanove, inštituta ali klinike, kjer je delo nastalo. Avtorji morajo izpolnjevati pogoje za avtorstvo. Prispevati morajo k zasnovi in oblikovanju oz. analizi in interpretaciji podatkov, rokopis morajo intelektualno zasnovati oz. ga kritično pregledati, strinjati se morajo s končno različico rokopisa. Samo zbiranje podatkov ne zadostuje za avtorstvo.

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PRIMERI ZA CITIRANJE LITERATURE

primer za knjigo:

1. Anderson P, Baumberg P. Alcohol in Europe. London: Institute of Alcohol Studies, 2006.
2. Mahy BWJ. A dictionary of virology. 2nd ed. San Diego: Academic Press, 1997.

primer za poglavje iz knjige:

3. Urlep F. Razvoj osnovnega zdravstva v Sloveniji zadnjih 130 let. In: Švab I, Rotar-Pavlič D, editors. Družinska medicina. Ljubljana: Združenje zdravnikov družinske medicine, 2002:18-27.
4. Goldberg BW. Population-based health care. In: Taylor RB, editor. Family medicine. 5th ed. New York: Springer, 1999:32-6.

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TABELE

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