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SOLVING MEDICAL MYSTERIES: HIDDEN STRESSES AND UNEXPLAINED SYMPTOMS

REŠEVANJE MEDICINSKIH UGANK: PRIKRITI STRES IN NEPOJASNJENI SIMPTOMI

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Editorial

ABSTRACT

Keywords:
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Medically unexplained symptoms and chronic functional syndromes are common but few healthcare professionals have had formal training about their connection to psychosocial issues. A systematic approach to diagnosis and treatment based on experience with over 7000 of these patients is described. Outcomes improve with assessment for and treatment of current life stresses, the prolonged impact of adversity in childhood and somatic presentations of depression, post-traumatic stress, and anxiety disorders.

IZVLEČEK

Ključne besede:
medicinsko nepojasnjeni simptomi, kronični funkcionalni sindromi, sindrom telesne stiske, psihofiziološke motnje

Kljub pogostosti medicinsko nepojasnjenih simptomov in kroničnih funkcionalnih sindromov so le nekateri zdravstveni strokovnjaki formalno usposobljeni za prepoznavanje njihove povezave s psihosocialnimi težavami. Članek opisuje sistematični pristop k postavljanju diagnoze in zdravljenja glede na izkušnje z več kot 7000 pacienti. Rezultati se izboljšajo z ovrednotenjem in zdravljenjem trenutnega stresa v življenju pacienta, podaljšanega vpliva tegob iz otroštva ter somatskih prikazov depresije, posttravmatskega stresa ter anksioznih motenj.

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1 PSYCHOPHYSIOLOGIC DISORDERS

In primary care, 25-33% of patients suffer from illness not fully explained by diagnostic tests. In these patients, pain or other symptoms (often more than one) can affect almost any structure, organ system or body region. There is growing evidence from controlled trials that addressing psychosocial problems in this population leads to significantly improved outcomes. However, few healthcare professionals have had formal training about the link to stressful issues. Clinicians who are familiar with these connections can achieve much better outcome for their patients.

Psychosocial issues encountered during experience with over 7000 of these patients are described below. These include current life stresses, the prolonged impact of adversity in childhood and primarily somatic presentations of depression, post-traumatic stress, and anxiety disorders. Although many people are reluctant to consider stress as a cause of physical symptoms, they can be reassured by the concept that “tension headaches” can occur in other places in the body.

A new term for stress-related illness is Psychophysiologic Disorders (PPD). This reflects growing evidence that chronic stress can alter nerve pathways in the brain. However, the phrase Stress-Related Illness remains preferred when communicating with patients.

2 THE STRESS EVALUATION

There are five major types of stress to look for in patients with diagnostically unexplained symptoms. Suspicion of a link between any of these and the patient’s condition is stronger if a stress occurred just before symptoms began or is linked to flares of symptoms. You might also listen for clues that symptoms are highly unlikely to have an organic or structural cause. For example, one of my patients was a 40 year-old man who had abdominal pain only while driving to work but not when driving home or on days off work. (His job became stressful shortly before the pain started.)

2.1 Part I. Current Stresses

Almost any source of ongoing life stress is capable of causing physical symptoms. Listen for evidence of a personal crisis, issues with religious faith, problems with a spouse or partner, Lesbian/Gay/Bisexual/Transgender concerns, difficulty with children or parents, workplace stress, financial problems or a dilemma involving a friend or neighbour. Be alert for stressful events that link chronologically to symptom flares.

1 PSIHOFIZIOLOŠKE MOTNJE

Na ravni osnovnega zdravstvenega varstva 25–33% pacientov trpi za boleznijo, ki ni v popolnosti obrazložena z diagnostičnimi testi. Pri teh pacientih bolečina ali kateri drugi simptomi (pogosto več kot le eden) prizadenejo skoraj vsako strukturo, sisteme organov ter dele telesa. Vedno več je dokazov, pridobljenih z nadzorovanimi preizkusi, ki dokazujejo, da opozarjanje na psihosocialne težave v tej populaciji pomeni znatno izboljšanje, toda le nekateri zdravstveni strokovnjaki so formalno usposobljeni za prepoznavanje povezave s težavo stresa. Zdravstveni delavci, ki so seznanjeni s temi povezavami, lahko dosežejo boljše rezultate pri svojih pacientih.

V nadaljevanju je opis psihosocialnih težav glede na izkušnje z več kot 700 pacienti, kar vključuje trenutni stres, podaljšani vpliv tegob iz otroštva ter predvsem somatske prikaze depresije, posttravmatski stres ter anksiozne motnje. Čeprav večina ljudi stežka poveže stres z vzrokom fizičnih simptomov, se to zlahka dokaže s konceptom, da se »tenzijski glavoboli« pojavljajo tudi na drugih deli telesa.

Nov izraz za bolezni, ki so povezane s stresom, je psihofiziološke motnje (PPD), kar odraža vedno več dokazov, da kronični stres lahko spremeni živčne poti v možganih. Pri komunikaciji s pacienti se še vedno uporablja opisno izrazje »bolezni, povezane s stresom«.

2 OVREDNOTENJE STRESA

Pri pacientih z nerazloženimi simptomi s strani diagnostike se pojavlja pet večjih vrst stresa. Sum na povezavo med temi in stanjem pacienta je močnejši, če so se simptomi pojavili takoj za stresno situacijo ali je stres povezan s pojavom simptomov. Prav tako ste lahko pozorni, če simptomi nimajo zelo verjetnega organskega ali strukturnega vzroka. Na primer, eden izmed mojih pacientov je bil 40-letni moški, ki je občutil bolečino v trebuhu le med vožnjo v službo, bolečina pa se ni pojavljala na poti domov ali v prostem času. (Njegova služba je postala zelo stresno okolje tik preden so se pojavile bolečine.)

2.1 I. del: Trenutni stres

Skoraj vsak vir trajajočega življenjskega stresa je lahko povzročitelj fizičnih simptomov. Prisluhnite znakom osebne krize, tegob z verskim verovanjem, težav z zakoncem ali partnerjem, dvomov glede pripadnosti v LGBT skupino, težav z otroci ali starši, stresa v delovnem okolju, finančnih težav ali težav s prijateljem ali sosedom. Bodite pozorni na stresne dogodke, ki kronološko povezujejo pojave simptomov.

Another common theme in this category is a lack of self-care skills. Good questions that loved ones can help answer are:

- Do you care for those close to you but have difficulty finding time for yourself?
- What do you do for enjoyment and how often?

For many of these patients, their only relief from endless obligations is when symptoms force them to rest. Most of them suffered a challenging childhood that diverted them from attending to their own needs. They were left with little experience taking time for personal fulfilment and recreation.

2.2 Part II. Adverse Childhood Experiences (ACEs)

About 2/3 of adults have experienced at least one ACE and 1/6 have experienced at least four. ACEs increase the risk for many types of poor health outcome including PPD, which can begin during childhood, adolescence or well into mid-life. Symptoms can be mild or severe, single or multiple, and can persist for years or even decades. Most patients are grateful for inquiry with the following sequence of questions:

1. Were you under stress as a child?
2. If so, can you tell me a little about what happened to you?
3. If you learned that a child you care about was growing up exactly as you did, how would that make you feel? (Patients tend to minimize the adversity they suffered, but this question can help them to a more accurate assessment.)
4. Are you still interacting with a person who was stressful for you as a child? (If so, it is often essential to change the nature of the encounters or set boundaries that limit them.)

After each question, listen for mistreatment capable of causing enduring harm to self-esteem and/or anger, shame, fear, grief or guilt. This suffering often proves to be the source of unresolved emotions that are then expressed somatically. This is the fundamental cause of PPD in ACE survivors. Common forms of childhood mistreatment in this population include abuse, neglect, lack of praise or emotional support, excessive responsibilities, bullying by peers and parental violence or substance abuse.

Many PPD patients experience three overlapping stages in recovering from ACEs. You may detect evidence for this in your conversations with ACE survivors.

Stage One. Characterized by personality traits that developed in response to ACEs including poor self-esteem, stressful personal relationships, perfectionism, detrimental levels of self-sacrifice and increased

Eden izmed pogostih pojavov v tej kategorij je pomanjkanje zmožnosti, da pacient poskrbi zase. Vprašanja, na katera lahko pomagajo odgovoriti tudi bližnje osebe pacienta, so:

- Ali skrbite za ljudi, ki so vam blizu, toda stežka najdete čas samo zase?
- Kako se sproščate in kako pogosto?

Za veliko teh pacientov predstavlja edini oddih od nenehnih obveznosti čas, ko jih simptomi prisilijo v počitek. Večina pacientov je imela težko otroštvo, ki jih je odvrnilo od tega, da poskrbijo za svoje potrebe. Enostavno nimajo izkušenj s tem, da si vzamejo čas za osebno izpopolnjevanje in rekreacijo.

2.2 II. del: Tegobe iz otroštva (ACE)

Dve tretjini odraslih je v otroštvu doživelo vsaj eno tegobo (ACE), ena šestina pa vsaj štiri. ACE povečajo tveganje za več vrst slabega zdravstvenega stanja, vključno s psihofiziološkimi motnjami (PPD), ki se pojavijo v otroštvu, mladostništvu ali v srednjih letih. Simptomi so lahko mili ali izraziti, lahko je eden ali jih je več, lahko pa se obdržijo tudi več let ali desetletij. Večina pacientov je hvaležna za naslednja vprašanja:

1. Ste bili v otroštvu veliko pod stresom?
2. Če ste, lahko delite z menoj, kaj se vam je zgodilo?
3. Kako bi se počutili, če bi izvedeli, da otrok, ki ga imate radi, odrašča v enakem okolju, kot ste vi? (Pacienti pogosto zmanjšujejo pomembnost svojih tegob, to vprašanje pa lahko pripomore k bolj pravilnemu ovrednotenju).
4. Ste še vedno v stikih z osebo, ki je bila za vas stresna v otroštvu? (Če je tako, je pogosto bistvenega pomena, da se spremenijo nameni teh srečanj ali se jih omeji s pravili).

Pri vprašanjih bodite pozorni na ravnanje s pacientom, ki lahko povzroči trajajoče poškodbe na samozavesti, in/ali jezo, sramoto, strah, žalovanje ali krivdo. Tako trpljenje je zelo pogosto vir nerazrešenih čustev, ki se izražajo na somatski način, kar je temeljni vzrok za osebe, ki so preživele PPD in ACE. Pogoste oblike nepravilnega ravnanja v otroštvu so zloraba, zanemarjanje, pomanjkanje hvale ali čustvene podpore, preobremenjenost z obveznostmi, ustrahovanje vrstnikov ter nasilje staršev ali jemanje prepovedanih substanc.

Veliko pacientov s PPD doživlja tri ravni zdravljenja ACE, ki se med seboj prekrivajo, določi pa se jih s pogovorom.

Prva raven. Lastnost te ravni so osebnostne sledi, ki se razvijejo kot odgovor na ACE, torej nizka samozavest, stresna osebna razmerja, perfekcionizem, škodljive ravni požrtvovalnosti ter povečana opreznost.

vigilance. Anxiety and depression often are present. Also common are behaviours that support coping such as eating disorders, addictions (alcohol, drugs, nicotine, exercise, work, sex, gambling, shopping), and self-injury. Positive characteristics include reliability, attending to details, a capacity for hard work and compassion for others in need.

Stage Two. Negative traits from Stage One diminish and the positive traits generate supportive feedback from friends and colleagues. This leads to steady growth in self-esteem. Many eventually recognize they deserve to be treated far better than they were as children. For the first time they feel worthy of mutually supportive relationships.

Stage Three. Reduced stress, improved self-esteem and feeling worthy of better treatment contrasts with and generates emotion about adversity suffered as a child. But because of years spent suppressing emotional reactions, many lack conscious awareness of anger, shame, fear, grief or guilt even when an ACE perpetrator is still active in the patient's life. The result is that emotion is expressed somatically (causing symptoms) rather than verbally or via behaviour. (It is not uncommon for symptom onset to coincide with the first supportive relationship, referred to as the Good Partner/Bad Illness syndrome).

It is remarkable how frequently ACE survivors are unaware of emotions powerful enough to cause physical symptoms.

2.3 Part III. Depression

In primary care, patients with depression typically present not with their mood disorder but rather with one or more body symptoms. Many do not feel depressed though they might admit to feeling stressed or frustrated. A vague, non-specific description of the symptoms and desperation to find relief are clues to depression. Confirmation usually follows from inquiry into early morning awakening, anhedonia, fatigue, anorexia, tearfulness, thoughts of self-harm, and loss of hope for the future.

2.4 Part IV. Post-Traumatic Stress

Routinely ask about traumatic, terrifying or horrifying life events. The link to PPD is clear when symptoms begin soon after the trauma, especially when accompanied by typical manifestations of Post-Traumatic Stress such as flashbacks, nightmares, avoidance of reminders of the trauma, emotional numbness, and increased vigilance.

PPD that begins long after the trauma is more challenging to diagnose and is not rare. Symptoms usually follow a triggering event linked to the trauma.

Pogosti sta tudi anksioznost in depresija. Prav tako so pogoste tudi motnje prehranjevanja, odvisnosti (alkohol, droge, nikotin, telovadba, delo, spolni odnosi, igre na srečo, nakupovanje) ter samopoškodovanje. Pozitivne lastnosti pa so zanesljivost, pozornost glede podrobnosti, zmožnost težkega dela in sočustvovanje z ostalimi pomoči potrebnimi.

Druga raven. Negativne lastnosti prve ravni se zmanjšajo, pozitivne pa pridobijo spodbudno povratno informacijo s strani prijateljev in sodelavcev, kar pomeni stalno rast v samozavesti. Mnogi sčasoma prepoznajo, da si zaslužijo boljšega ravnanja kot so z njimi ravnali v otroštvu. Tokrat se prvič počutijo vredni odnosov z medsebojnim spoštovanjem.

Tretja raven. Zmanjšanje stresa, izboljšana samozavest in občutek vrednosti za boljše ravnanje povzroči sočustvovanje s tegobami iz otroštva. Zaradi več let, ko so pacienti zadrževali čustvene odzive, jih ima večina pomanjkanje zavedanja o jezi, sramoti, strahu, žalovanju ali krivdi, četudi je storilec ACE še vedno prisoten v življenju pacienta. To povzroči somatsko doživljanje čustev (povzročitelj simpotomov), namesto verbalnega izražanja ali skozi obnašanje. (Pogosto se simptomi pojavijo v prvem spodbudnem odnosu, kar se imenuje sindrom dobrega partnerja/slabe bolezni).

Neverjetno je, kako pogosto se osebe, ki so preživele ACE, ne zavedajo čustev, ki so dovolj močna, da povzročijo fizične simptome.

2.3 III. del: Depresija

V osnovnem zdravstvenem varstvu se pacienti z depresijo bolj pogosto pojavijo z enim ali več telesnimi simptomi kot pa z motnjo razpoloženja. Mnogi se ne počutijo depresivno, čeprav priznajo, da se počutijo, da so pod stresom ali razdraženi. Dokazi za depresijo so nejasni, nedoločni opisi simptomov in obupanost glede olajšanja le-teh. Potrditev nato pridobimo iz vprašanj, ki jih postavimo o prebujanju v zgodnjem jutru, anhedoniji, utrujenosti, anoreksiji, jokavosti, mislih o poškodovanju samega sebe ter izgubi upanja za prihodnost.

2.4 IV. Del: Posttravmatski stres

Pod okriljem rutine postavite vprašanja glede travmatskih ali grozovitih življenjskih dogodkov. Povezava s PPD je jasna, če so se simptomi pojavili takoj po dogodku, predvsem pa, če jih spremljajo tipični prikazi posttravmatskega stresa, kot so podoživljanje preteklosti, nočne more, izogibanje opominov na izkušnjo, čustvena otopelost ter povečana opreznost.

PPD, ki se pojavi nekaj časa po travmatski izkušnji, je težje prepoznati in ni pogosta, simptomi pa se pogosto pojavijo po dogodku, ki je povezan s travmatsko izkušnjo.

2.5 Part V. Anxiety Disorders

The prevalence of Generalized Anxiety Disorder (GAD) in primary care is 7-8% and most complain of physical symptoms rather than worry or fear. A clue to GAD is that somatic symptoms tend to be significantly less severe at times when the patient feels safe. Most GAD patients will admit to excessive worry about minor matters if asked specifically.

3 CONCLUSION

Millions of patients suffer from PPD. Physicians (with support from colleagues in mental health) who address the psychosocial issues described above can significantly improve their patients' outcomes.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

REFERENCES

1. Clarke DD. They can't find anything wrong!: 7 keys to understanding, treating, and healing stress illness. Boulder: Sentient Publications, 2007.
2. Stress Illness website: www.stressillness.com.

2.5 V. del: Anksiozne motnje

Pojav splošne anksiozne motnje (GAD) v osnovnem zdravstvenem varstvu je 7–8 %, večina pa potoži zaradi fizičnih simptomov, ne pa zaradi skrbi ali strahu. Dokaz za pojav GAD so somatski simptomi, ki so veliko manj prisotni v situacijah, ko se pacient počuti varno. Večina pacientov z GAD bo priznala, da jih preveč skrbi glede manjših zadev, če jih vprašate neposredno.

3 ZAKLJUČEK

Zaradi PPD trpi na milijone pacientov. Zdravniki (s podporo sodelavcev s področja duševnega zdravja), ki prepoznajo psihosocialne težave, lahko občutno pripomorejo k zdravljenju pacientov.

NASPROTJE INTERESOV

Avtorji izjavljajo, da ne obstajajo nasprotja interesov.

LITERATURA

1. Clarke DD. They can't find anything wrong!: 7 keys to understanding, treating, and healing stress illness. Boulder: Sentient Publications, 2007.
2. Stress Illness website: www.stressillness.com.

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Jakič M, Rotar Pavlič D. Patients' perception of differences in general practitioners' attitudes toward immigrants compared to the general population: QUALICOPC Slovenia. Zdrav Var 2016; 55(3): 155-165

PATIENTS' PERCEPTION OF DIFFERENCES IN GENERAL PRACTITIONERS' ATTITUDES TOWARD IMMIGRANTS COMPARED TO THE GENERAL POPULATION: QUALICOPC SLOVENIA

POGLED PACIENTA NA RAZLIKE V ODNOSU ZDRAVNIKA SPECIALISTA DRUŽINSKE MEDICINE DO PRISELJENCEV V PRIMERJAVI S SPLOŠNO POPULACIJO: QUALICOPC SLOVENIJA

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ABSTRACT

Keywords: patients' perception, general practitioners' attitudes, immigrants, language barriers

Introduction. Globally, the number of immigrants is rising every year, so that the number of immigrants worldwide is estimated at 200 million. In Slovenia, immigrants comprise 6.5% of the overall population. Immigrants bring along to a foreign country their cultural differences and these differences can affect immigrants' overall health status and lead to chronic health conditions. The aim of this study was to identify patients' perception of general practitioners' (GPs') attitudes toward immigrants in Slovenia.

Methods. This study was based on the Qualicopc questionnaire. We used the questions that targeted patients' experience with the appointment at their GP on the day that the study was carried out.

Results. There were no differences in GPs' accessibility based on groups included in our study (p>0.05). Compared to the non-immigrant population, first-generation immigrants answered that their GPs were impolite (p=0.018) and that they did not take enough time for them (p=0.038). In addition, they also experienced more difficulties understanding their GP's instructions (p<0.001). Second-generation immigrants experienced more negative behaviour from GPs, and first-generation immigrants had more difficulties understanding GPs' instructions.

Conclusion. There may be some differences in patients' perception of GPs' attitudes towards immigrants in comparison with the general Slovenian population. However, based on the perception of the immigrants that do benefit from the medical care it is not possible to judge the GPs' attitudes towards immigrants as worse compared to their attitude towards the non-immigrant population. Indeed, there may be other reasons why the patients answered the way they did.

IZVLEČEK

Ključne besede: *odnos zdravnika specialista družinske medicine, priseljenci, jezikovne omejitve*

Uvod. *Število priseljencev v svetovnem merilu vsako leto narašča. Ocenjeno število priseljencev tako znaša že kar 200 milijonov ljudi. V Sloveniji priseljenci predstavljajo 6,5-odstotni delež vseh prebivalcev. Priseljenci ob selitvi v novo državo s seboj prinesejo tudi pomembne kulturne razlike v odnosu do zdravja in zdravstva v primerjavi s splošno populacijo. Vse te razlike imajo lahko pomemben vpliv na splošni zdravstveni status priseljenca in lahko vodijo v razvoj različnih kroničnih bolezni. Vedno več držav se v zadnjem času zaveda težav, s katerimi se priseljenci srečujejo v zdravstvenih ustanovah, ter se z različnimi programi skušajo priseljencem približati ter jim olajšati in omogočiti enakovreden dostop do zdravstvenih storitev. Namen naše študije je bil ugotoviti, ali imajo zdravniki specialisti družinske medicine po mnenju pacientov resnično drugačen odnos do priseljencev v Sloveniji, kakšni so razlogi za to in s kakšnimi težavami na področju zdravstva se priseljenci v Sloveniji srečujejo.*

Metode. *Študija temelji na rezultatih, pridobljenih s pomočjo Qualicopcovega vprašalnika, izvedenega leta 2011 v Sloveniji. Pacientom so po posvetu z izbranim zdravnikom študenti medicine v izpolnjevanje ponudili vprašalnik, ki se je nanašal na njihovo predhodno obravnavo pri zdravniku. Iz Qualicopcovega vprašalnika smo izluščili tista vprašanja, ki zadevajo problematiko, obravnavano v naši študiji. Uporabili smo bazo P QE 4. 1. junij 2014.*

Rezultati. *Pri odgovoru na vprašanje o dostopnosti zdravnika specialista družinske medicine za priseljence glede na splošno populacijo ni bilo statistično pomembnih razlik (p>0,05). V primerjavi s splošno populacijo je prva generacija priseljencev statistično pomembno večkrat podala odgovor, da je bil zdravnik specialist družinske medicine do njih neprijazen (p=0,018), prav tako pa jih več misli, da si zdravnik ni vzel dovolj časa zanje (p=0,038). Predstavniki prve generacije priseljencev imajo tudi več težav z razumevanjem navodil zdravnika (p<0,001). Predstavniki druge generacije priseljencev so večkrat odgovorili, da je zdravnik do njih pokazal slabši odnos, predstavniki prve generacije priseljencev pa so večkrat odgovorili, da imajo težave z razumevanjem zdravnikovih navodil.*

Zaključki. *Rezultati študije so prikazali, da obstaja kar nekaj razlik med predstavniki prve/druge generacije priseljencev in splošno populacijo v povezavi z njihovim doživljanjem odnosa z zdravnikom specialistom družinske medicine. Kljub temu pa ne moremo le na podlagi nekaj izvzetih vprašanj dokončno zaključiti, da je odnos zdravnikov specialistov družinske medicine do priseljencev slabši kot do splošne populacije, saj za dane odgovore obstaja več različnih vzrokov, za katere pa ni nujno odgovoren le zdravnik.*

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1 INTRODUCTION

People leave their home countries for various reasons: either because of war and poor living conditions in their homeland, or due to better job opportunities and social-economic status in a new country (1-3). This is why people mostly emigrate from countries with poor medical care to the countries where medical care is considerably better (1). Globally, the number of immigrants is rising every year; between 1990 and 2005, this number increased by 33 million each year. The number of immigrants worldwide is estimated at 200 million (4).

The important issue for this study is that immigrants bring along their cultural differences in relation to health and also their own perspective on the healthcare they need (1). They tend to have a different health behaviour compared to the non-immigrant population: regarding alcohol consumption, smoking, physical activity, among other behaviours. These differences may affect immigrants' overall health status and lead to chronic health conditions (5, 6). Immigrants are less responsive to various systematic prevention programs, and they have a lower vaccination rate (1, 7). It is also significant that they often do not know the healthcare regulations in their host country, which may lead to difficulties when arranging appointments and following registration procedures (1). In order to ameliorate the situation, general practitioners (henceforth GPs) dealing with recently arrived immigrants are provided with certain guidelines. These guidelines advice caution in the first contact with immigrants and recommend treating high-priority conditions immediately. GPs should pay special attention to abuse or domestic violence, mental illnesses, diabetes mellitus, dental care, infectious diseases (HIV, hepatitis), and other conditions (4, 8-10).When doctors and their patients come from different cultural environments, their communication is somehow difficult. If patients have to express themselves in a foreign language, problems may arise already at the linguistic level. For example, immigrants may not understand their GPs, but are too embarrassed to admit it. They may also misunderstand the doctor's instructions. Studies have shown that the greatest difficulties occur with the patients that have limited language proficiency: even if they can articulate their problems and they do understand the doctor's instructions, they might not be able to talk about their emotions. Too often, the language issues prevent these patients from being treated the same way as the non-immigrant population. Many studies have recommended that doctors should suggest an interpreting service for their patients in such cases (11, 12).

Many studies have highlighted adjustment challenges that immigrants might experience, including (as mentioned above) language differences, as well as homesickness, unfamiliarity with the social-cultural system, unemployment, educational difficulties, and social exclusion. They may also experience difficulties with respect to their religion, family traditions, and values (13-15). All of these differences and difficulties may contribute to immigrants' social and emotional instability. This is an additional challenge that GPs face when consulting immigrants (13).

1.1 Immigrants in Slovenia

Immigrants have left a significant mark on the population and social development of Slovenia over the last fifty years. The migration flow between Slovenia and foreign countries beyond the former Yugoslavia did not change significantly after Slovenia's independence. Migration remains closely associated with immigrants from other countries of the former Yugoslavia. Slovenia has been and also remains a target destination for many residents from these areas. It has also been observed that the number of immigrants in Slovenia has increased in the last decade, mainly due to two reasons. First, there are favourable economic conditions and increased demand for labour in certain sectors (e. g., construction) that cannot be satisfied by Slovenian labour market. Second, Slovenia's admission to the European Union (EU) has encouraged migration of EU citizens and family reunification (secondary migration of family members to Slovenia) (16).

On January 1st, 2014 there were 96,608 immigrants registered in Slovenia which, according to the data provided by the Statistical Office of the Republic of Slovenia, comprised 4.7% of all Slovenian residents. In this share, men predominate (67.2%). However, the proportion of female immigrants is growing every year. In 2013, their share increased by 6.5% compared to the previous year (17). Regarding the distribution of immigrants in Slovenia, more immigrants settle in urban areas than in rural areas, but there are also significant variations between different cities (18).

In order to help immigrants to integrate into Slovenian society, they are provided with an educational program. In the course of initial integration, immigrants are familiarized with Slovenian language and culture, the education system, and their options for finding employment. This allows them to integrate more rapidly and find a job more easily, which makes them financially independent (19).

1.2 Immigrants and the Healthcare System in Slovenia

Slovenia has a Bismarckian type of social insurance system based on a single insurer for statutory health insurance, which is fully regulated by national legislation and has been administered by the Health Insurance Institute of Slovenia (HIIS) since 1992. This insurance is universal and is based on either clear employment status or a legally defined dependency status (such as: for minors, unemployed spouses, registered unemployed people and individuals without a source of income) (20). In Slovenia, the access to GPs and to other doctors in primary care (e. g., paediatricians, gynaecologists) is almost universal. Since all insured residents of Slovenia have the right to choose a GP, paediatrician, and/or gynaecologist for free (21).

Healthcare for asylum seekers is organized within the framework of the public health network. In the event of sickness, the asylum seeker may receive treatment at the nearest healthcare centre upon presenting a valid asylum-seeker identity card. There is no specific legislation regarding healthcare for undocumented migrants. However, according to the Health Care and Health Insurance Act of 1992 (Official Gazette of the Republic of Slovenia no. 9/92), the Asylum Act (Official Gazette of the Republic of Slovenia no. 61/99), and the Aliens Act (Official Gazette of the Republic of Slovenia no. 14/99) the funding of urgent healthcare for individuals of unknown residence should also be provided (22). Since this entitles anybody to urgent medical care, it applies to undocumented migrants, too (23).

According to current international law (the General Administrative Procedure Act, Patient Rights Act, and International Protection Act), patients have the right to an interpreter if they cannot understand or speak the official language of the country in which they are treated. In Slovenia, however, legislation in this area is insufficient and, as a consequence, the communication between patients and medical staff is often improvised (24).

1.3 Healthcare Providers' Attitude toward Immigrants

Today, most countries are more aware of the problems that immigrants encounter when entering foreign healthcare systems. Governments are preparing documents that would establish equally accessible healthcare for all. These new practices represent a complex challenge for healthcare employees, social workers, and the Governments themselves (25, 26). Given high percentages of immigrants, the question arises whether GPs' attitude towards immigrants differs from the one they develop towards the non-immigrant population. The aim of this study was to explore whether GPs show a different attitude toward immigrants in Slovenia and, if so, what are the reasons for this, and whether this attitude causes any difficulties for immigrants in Slovenia when accessing medical care. We were interested in the greatest obstacles that immigrants face when consulting GPs and we tried to find out what can be done to minimize or at least reduce these inequalities.

2 METHODS

2.1 The Qualicopc Questionnaire

The research questions of this study were based on the Qualicopc questionnaire. The questionnaire and the introductory page were translated into national languages in two steps. As the first step, the national coordinator organized the translation of the questionnaire by a small local team of people that were familiar with primary care practice and terminology in their country, and had a thorough knowledge of the English language. The national coordinator subsequently forwarded this translation to Netherlands institute for health services research (NIVEL), which had the text translated again, this time by a professional translator. The differences between both translations were examined by a professional translator. Passages inappropriately translated according to the professional translator were corrected and sent back to the national coordinator. The national coordinator and professional translator harmonized the discrepancies and jointly decided on the best version of translation (27-29). At the coordinators' meeting, we decided that the number of GPs sampled should be large enough to obtain a response from at least 220 GPs in each country (one GP per practice). Thus, the size of the sample depended on the expected participation of GPs. For example, if the national coordinator expected 25% of the GPs contacted to participate, the original sample size had to include at least 880 GPs. In countries with a very small population, the desired number of GPs surveyed was smaller (80 to 100). GPs were invited to participate using various methods: e-mail, letters, telephone calls, personal contacts, and advertisements. We aimed for a nationally representative sample of GPs. If national registers of GPs were available, we used random sampling to select GPs. In countries with only regional registers, random samples were drawn from regions that represented the national setting. If no registers existed, but only the lists of facilities in a country, a random selection was made from such lists (27-29).

The questionnaires were filled in by patients in GPs' waiting rooms in 34 different countries. Thirty-one European countries participated, among them 27 countries from the European Union, plus Iceland, Norway, Switzerland, and Turkey. Australia, Israel, and New Zealand also participated in the study. The Qualicopc study was funded by the European Commission under the Seventh Framework Program to access the quality, equity, and costs of primary care in Europe. The study started in 2010 and lasted until 2013. Three level approaches to data collection were used in this study: the system, practice, and patient levels (27). The Qualicopc study consisted of four questionnaires: patients completed two questionnaires, one based on their experiences with physicians, other healthcare professionals, and the healthcare system, and the other based on their judgments regarding what is important for them in primary care (their values). Another questionnaire was completed by GPs, and the fourth questionnaire was completed by fieldworkers. The questionnaire for GPs mostly focused on the type of work they have and the structural organization of their practices, clinical tasks, and workloads, but not on their attitude toward immigrants (28).

In Slovenia, the Qualicopc survey was conducted in 2011. All GPs in Slovenia received the invitation letter to participate in the survey. From all GPs in Slovenia we made a random sample. GPs in the sample received a phone call from a researcher with invitation to participate in the survey. None of the sampled GPs refused to participate in the survey. GPs were asked to answer the questionnaire for physicians. The second part of the study consisted of a visit by the fieldworker (a medical student) in the chosen GP's waiting room. This was done with the intention of avoiding any impact of GPs or nurses on patients when completing the questionnaires. Patients were interviewed in September and October 2011, at any work day in the morning or in the afternoon, depending on GP's working hours. The fieldworker collected 9 completed questionnaires about today's experience in GP's office and 1 completed questionnaire about values in each GP's waiting room. Patients filled in the questionnaire in complete anonymity. Patients older than 18 years were invited to participate in the survey, and each patient had the option to refuse to participate. Fieldworkers, if it was necessary, helped patients complete the questionnaire. They also helped to fill in the questionnaire if patients had poor eyesight, reading difficulties and/or poor hearing. They excluded only patients who were not able to answer the questions in spite of fieldworker's help.

The results of the questionnaire for the Slovenian population are available at the Statistical Office of the Republic of Slovenia.

For the purposes of this study, we used the data obtained in Slovenia. We used questionnaires completed by patients referring to the patients' experience with their GPs. For our analysis, we used base P QE 4.1. June 2014 (this database was the most recent at the time of writing and it is available at the Statistical Office of the Republic of Slovenia).

We focused only on some of the issues from this questionnaire that we found crucial for our study. Some basic data about our participants were used in the research, such as patients' gender, age, education, and country of birth for them and their mothers. We focused on the following questions in the Qualicopc questionnaire. First, we were interested in GPs' availability, and so we focused on whether patients have their own GP whom they consult first and whether it was easy to fix an appointment with their GP. Possible answers were "yes" and "no". The next selected question was related to the consultation that day. Patients were able to choose among several possible answers, which are listed in Table 2. We were also interested in whether the patient would recommend the GP to a friend or a relative. The only possible answers were "yes" and "no". We also focused on questions that concerned negative experiences with the GP during the previous 12 months. These questions are listed in Table 3. Patients were able to choose among multiple answers. Finally, we focused on interpreters' availability. The possible answers were that an interpreter is always available, usually available, not available or insufficiently available at GP's practice.

For the purpose of our study, we defined three groups of participants. Group 1 (G1) included patients that were born abroad (first-generation immigrants) according to the Qualicopc questionnaire. Group 2 (G2) included patients that were born in Slovenia, but whose motherswere born abroad (second-generation immigrants). We did not focus on the father's birthplace because this information is not included in the Qualicopc study. Group 3 (G3) included the Slovenian non-immigrant population.

2.2 Statistical Analysis

Statistical analysis was performed using SPSS Stat. Software. A binominal test was used to determine gender distribution and Student's t-test was used to determine age distribution. To compare the differences between groups, we used Student's t-test and a chi-square test. The data were compared by average, summation, and standard deviation.

3 RESULTS

3.1 Patients' Characteristics

Questionnaires were completed by 1,941 patients between the ages of 18 and 95 years. The average age of respondents was 49.74 (±16.98) years. Among these, 793 (40.9%) were male and 1,146 (59.1%) female; for two patients these data were not available.

G1 included 225 (11.6%) individuals: 41 (18.2%) patients were born in a foreign EU country, 138 (61.3%) in a European country outside the EU, one (0.4%) in North America, Australia, or New Zealand, and 42 (18.7%) in other countries. For three (1.3%) patients we do not have this information. G2 included 128 (6.6%) individuals whose mother was born abroad: 25 (19.5%) in an EU country, 71 (55.5%) in a European country outside the EU, one (0.8%) in North America, Australia, or New Zealand, and 31 (24.2%) in other countries. G3 included 1,588 (81.8%) patients, representing the non-immigrant population of Slovenia.

G1 included 104 (46.2%) men and 121 (53.8%) women, G2 included 57 (44.5%) men and 71 (55.5%) women, and G3 included 632 (39.8%) men and 954 (60.2%) women; for two patients these data were not available. It is important to emphasize that the G3 is significantly greater than the other two groups (G1 and G2) due to specific distribution of our patients. Patients' gender had a normal distribution based on a binominal test (p<0.001), and age also had a normal distribution according to Student's t-test (p<0.001). The comparison between the study groups according to the age and education level of the patients is presented in Table 1.

Table 1. General characteristics of the study groups. A chi-square test was used to compare different groups.

	G1 ***n*=225**	**G2** ***n*=128**	**G3** ***n*=1,588**	***P*** **(G1+G2)**	***P*** **(G2+G3)**	***P*** **(G1+G3)**
Average age (in years)	51.50 (±13.76)	39.76 (±15.02)	50.31 (±17.28)	<0.001	<0.001	0.1
Education (the number of patients)				<0.001	0.025	0.025
• None or (pre)primary	108 (48.0%)	24 (18.8%)	470 (29.6%)			
• Upper secondary	78 (34.7%)	72 (56.3%)	709 (44.6%)			
• Post-secondary, non-tertiary, or higher	38 (19.9%)	32 (25.0%)	399 (25.1%)			
• No information	1 (0.4%)	0 (0.0%)	10 (0.6%)			

Legend: G1=first-generation immigrants; G2=second-generation immigrants; G3=non-immigrants; *n*=the number of patients.

3.2 Access to GPs

We wanted to know whether the accessibility to GPs is different for immigrants compared to the non-immigrant population. For this purpose, we selected questions from the Qualicopc questionnaire in which patients were asked to specify whether they have their own GP that they normally consult first. In G1, two (0.9%) patients answered negatively, in G2 there was one (0.8%) such patient, and in G3 there were 12 (0.8%) such patients. There was no significant difference between the three groups (p>0.05). Patients were also asked whether it was easy for them to make an appointment at the GP's office. A negative response was obtained from six (2.7%) patients in G1, from two (1.6%) in G2, and from 63 (4.0%) in G3. There was no significant difference between the three groups (p>0.05).

3.3 Patients' Reflection on their Consultation

All three groups of patients were asked how they felt after their consultation at the doctor's office on the day they filled in the questionnaire. Their answers are presented in Table 2, which also shows some statistically important differences between the groups.

Table 2. Patients' impressions of their consultations with their GPs on the days they filled-in the questionnaire. A chi-square test was used to compare different groups.

	G1 *n*=225	G2 *n*=128	G3 *n*=1,588	*p* (G1+G2)	*p* (G2+G3)	*p* (G1+G3)
The GP was not polite	7 (3.1%)	1 (0.8%)	20 (1.3%)	0.270	0.876	0.018
The GP hardly looked at me	19 (8.4%)	4 (3.1%)	108 (6.8%)	0.107	0.265	0.117
The GP did not ask about my health problems	17 (7.6%)	17 (13.3%)	138 (8.7%)	0.169	0.212	0.160
I could not really understand what the GP was trying to explain to me	39 (17.3%)	11 (8.6%)	156 (9.8%)	0.053	0.886	<0.001
The GP did not take sufficient time for the appointment	21 (9.3%)	8 (6.3%)	99 (6.2%)	0.435	0.979	0.037
The GP did not involve me in decisions about treatment	41 (18.2%)	31 (24.2%)	362 (22.8%)	0.321	0.911	0.063
The GP is not familiar with my living situation	47 (20.9%)	37 (28.9%)	360 (22.7%)	0.021	0.028	0.506
The GP did not help me with my personal problems	47 (20.9%)	38 (29.7%)	446 (28.1%)	0.001	0.002	0.047
I would recommend this GP to a friend or a relative	206 (91.9%)	117 (91.4%)	1,452 (91.4%)	0.176	0.285	0.071

Legend: G1=first-generation immigrants; G2=second-generation immigrants; G3=non-immigrants; *n*=the number of patients.

3.4 Patients' Negative Experiences with their GPs in the Past 12 Months

Patients were asked whether they had any negative experiences in the past 12 months with their GPs or with their staff. They were also asked whether they felt being treated badly by their GPs or by the staff based on their ethnic background or gender. Their responses are summarized in Table 3. There were no statistically important differences found between the groups, as shown in Table 3, except regarding the statement "The GP or staff acted negatively toward me in the past 12 months" between G2 and G3 and regarding the statement "Other patients are treated better" between the groups G1 and G3.

Table 3. Patients' negative experiences with their general practitioners during the previous year. A chi-square test was used to compare different groups.

	G1 *n*=225	G2 *n*=128	G3 *n*=1,588	*p* (G1+G2)	*p* (G2+G3)	*p* (G1+G3)
The GP or staff acted negatively toward me in the past 12 months	11 (4.9%)	10 (7.8%)	53 (3.3%)	0.341	0.031	0.469
Other patients are treated better	9 (4.0%)	7 (5.5%)	35 (2.2%)	0.379	0.084	0.047
The GP disrespects me due to my ethnic background	1 (0.4%)	2 (1.6%)	11 (0.7%)	0.563	0.669	0.184
The GP disrespects me due to my gender	2 (0.9%)	0 (0.0%)	6 (0.4%)	0.324	0.813	0.191

Legend: G1=first-generation immigrants; G2=second-generation immigrants; G3=non-immigrants; *n*=the number of patients.

3.5 Language Barriers and the Possibility of an Interpreter

Because we studied the perception of GPs' attitudes toward immigrants, we also examined what patients' options are if they cannot understand what the GP is saying. Patients were asked if they were provided with interpreting service when they needed one to help them communicate with their GPs. Of all the patients, 53 (2.7%) answered that an interpreter was always available in their GP's practice, 19 (1.0%) patients answered that an interpreter was usually available, and 36 (1.9%) patients answered that an interpreter was not available or was insufficiently available. A total of 360 (18.5%) patients were unable to provide any information ("don't know"), and 1,473 (75.9%) patients did not answer the question.

4 DISCUSSION

The data obtained through the Qualicopc questionnaire provided valuable information regarding patients' perceptions of GPs' attitude toward immigrants in Slovenia.

According to the data available from the Statistical Office of the Republic of Slovenia, immigrants represent 4.7% of the population (17). This is a much smaller percentage than in our study, with patients that identified themselves as first-generation immigrants (11.6%). Such a difference is due to different methodologies. The statistical office included only individuals with foreign citizenship in this number. On the other hand, our study did not ask about the citizenship but only about the birth country.

Comparing the groups with respect to the education level showed statistically significant differences between the groups. Immigrants have lower education than the non-immigrant population. This is a possible reason why immigrants appear to be more susceptible to their environment and why they tend to think that they are treated worse than others. It was repeatedly shown that immigrants in general have lower education levels, but studies have also shown that those with lower education levels integrate more easily in their host countries (30, 31). On the other hand, for immigrants with a higher education it is more difficult to get a job, mostly due to the low rate of recognition of their credentials (32).

When comparing our three groups (first-generation immigrants, second-generation immigrants, and non-immigrants), we found no significant differences among them regardless of whether they have a personal GP selected or not. In general, only a very small percentage of the patients answered that they do not have a personal GP or that they had difficulties in making an appointment at their GP's office. All together could indicate that immigrants in Slovenia do not experience major difficulties accessing GPs and that they do not have to wait longer for an appointment than the general population. It is important to emphasize that these questionnaires were completed by patients in GPs' waiting rooms. Therefore, this data may only be accurate for our group of patients and cannot be understood in the sense that all immigrants in Slovenia have equal opportunities to get an appointment at a GP's office. The available data from the literature show that the choice of GP is influenced by several different factors, such as care quality, availability, and practice characteristics (33). Comparable data have been obtained in Canada with respect to the availability of GPs and other specialists for immigrants and for the rest of the population. However, according to the Canadian studies, fewer immigrants benefit from medical treatment. The reasons for such results may lie in better health status of immigrants and cultural differences in attitudes toward medical admission (7, 34). On the other hand, in Norway there is lower utilization of primary healthcare among elderly immigrants compared to the general population. The reasons for this may be the same as above, relying on cultural differences (34, 35). Better health status of immigrants in Europe compared to the non-immigrant population is a bit controversial; it shows a north-south gradient, since immigrants' health is better in Italy and poorer in France and Belgium (36, 37). Analysing the questions related to the appointment at the GP's office, we encountered some significant differences between the groups (Table 2). A comparison between the first-generation immigrants and the non-immigrant population shows that GPs are more impolite with immigrants. Several studies have shown that immigrants have a more negative experience with GPs compared to the non-immigrant population due to the language barriers, cultural differences, and the lack of familiarity with the healthcare system in the host country (1, 4, 5, 38, 39). An important cause of GPs' attitude toward immigrants in Slovenia may also be the additional burden they represent for the GPs' workload (40). There were 237 GPs per 100,000 people in Slovenia in 2006, which was well below the European average (332 to 338 per 100,000 in 2007) (41). GPs in Slovenia have between 862 and 3,186 registered patients, or an average of 1,771.37 ± 68.8 (42), and immigrant's unfamiliarity with the country's healthcare system (e. g., to call for an appointment) may present an additional workload, causing GPs to develop an unfriendly attitude toward the patient. A Canadian study showed that the immigrants' experiences with GPs significantly improved when these barriers and limitations disappeared (38). Several studies showed that the attitude of GPs is worse toward the people with mental illnesses compared to the healthy population (43, 44). This can lead to the conclusion that, as anybody else, GPs also have their stereotypes, and that these stereotypes influence their attitude toward their patients (45). At this point it is also worth mentioning that, according to some studies, immigrants are more vulnerable to developing a mental illness (46-48), and that they are also less likely to seek professional help in such case (49). Many factors are known to influence immigrants' mental health. Kirmayer et al. divided these factors into three groups, according to the stage of migration the individuals are in: premigration (e. g., trauma, political involvement, disruption of social norms), migration (e. g., trajectory, exposure to violence, disruption of family or community network), and postmigration (e. g., uncertainty about immigration or refugee status, unemployment, difficulties in language learning). They also presented factors affecting mental health distributed by age (children, adults, and the elderly) and by gender, arising from their different social roles and responsibilities. Immigrant women have a two- to three-times greater risk of developing depression compared to non-immigrant women (46). It is also interesting that different subgroups of an ethnic group vary according to incidence and type of mental illness. This shows the utmost importance of psychosocial and cultural factors related to migration and mental health (47). Therefore, in dealing with immigrants, GPs should pay special attention to evaluating risk factors for specific subgroups to develop a mental illness.

An important difference between the first-generation immigrants and the non-immigrant population is also that significantly more immigrants answered that their GP did not take enough time for their appointment. There may be multiple reasons for this: the GP may indeed have a slightly more negative attitude toward immigrants and wish to end the appointment as soon as possible, or immigrants may need more time than the non-immigrant population. This may be due to cultural differences, language barriers, and so on (13, 14). As already mentioned, the GPs' large workload may also prevent them from taking as much time as a patient needs (40). On average, in Slovenia, GPs have 45.63 patient encounters per day, which allows them 6.93 minutes per person – and this may not be enough in certain cases (42). In all three groups, a fairly large percentage of patients (from 20 % to 28%) answered that their GP did not help them solve their personal problems. In our opinion, this shows general discontentment with the healthcare system, which can be connected to the economic crisis peaking in Slovenia in the year the Qualicopc questionnaire was administered. Another reason, as mentioned earlier, may be short consultation times (43).

The analysis of questions related to patients' negative experience in the past 12 months indicates a significant difference between the groups (Table 3). Second-generation immigrants had negative experiences with GPs or their staff more often than the non-immigrant population, but unfortunately we do not have information about the type of these experiences. There are significantly more patients among first-generation immigrants that think that other patients receive better treatment than them. Indeed, several studies have shown that access to healthcare for immigrants may be more difficult because they do not understand the system very well, have trouble understanding the language, have difficulties adjusting to certain norms, and so on (13, 25, 50). All this may lead to poorer healthcare and therefore to more negative experiences with a GP or staff.

All of these differences in GPs' attitudes toward immigrants in comparison with the general population according to patients' perspectives could also be due to sociological factors. All individuals derive from their own cultural environment with different values, and thus have subjective expectations from their GPs (1, 4, 5, 39, 51, 52). As mentioned above, immigrants may also face different challenges in their host countries, such as language differences, homesickness for relatives still living in their countries of origin, unfamiliarity with the sociocultural system, unemployment, educational difficulties, and social exclusion, which may affect their view of their GPs' attitudes (13-15). This is why GPs must be aware of all these obstacles and difficulties that immigrants face and should try to remedy them (38, 53).

Among all of the patients, only 2.7% answered that an interpreter is always available at the GP's practice, and 1.0% answered that an interpreter is usually available. Based on the data available, we do not have clear information on how many practices abroad have an interpreter available if a patient requires one. However, many authors agree that the presence of an official interpreter (if needed) improves the quality of patients' care (54, 55). On the other hand, studies show that patients that need an interpreter but do not have access to one receive poorer medical care in comparison to the general population; their outcome seems to be worse, and their confidentiality is repeatedly violated (54, 55). An alternative has also been proposed in the literature: if a professional interpreter cannot be physically available at the practice, a telephone access to a professional interpreter should be offered (54). Another possibility is professionally trained volunteers to work as interpreters at GP practice (56). It has turned out that using family members as interpreters is not an optimal alternative, because they often fail to translate patients' words literally. They can also magnify patients' problems or minimize them, or even not attach importance to these problems (54, 57). Their mistakes in translation can also be life-threatening for patients (57). Today, GPs are increasingly aware of the importance of having access to interpreters for their patients if needed (58). Another interesting fact is that 18.5% of respondents are not familiar with the information about interpreter availability at their GP practice. These data should encourage GPs to promote interpreter service where it is available and therefore make it easier for their patients to visit a doctor and to talk about their health issues. It is also important for GPs to encourage the presence of an interpreter at their practice. Another important fact is that there is a significant difference in understanding GP's directions between G1 and the non-immigrant population (Table 2). The reason for this may be that immigrants have problems fully understanding Slovenian (11, 12) and are therefore in need of an interpreter. Another reason may be that they are less educated (Table 1) (1) compared to the non-immigrant population, and experience difficulties understanding technical words used by GPs.

Disadvantages of our study were that the G3 significantly outnumbered the other two groups (G1 and G2). This was of course expected, since the opposite breakdown is normally found in the general population. An important weakness of this study is also that we have lower frequency of positive answers in some questions than in others, in spite of statistically significant difference between selected groups.

5 CONCLUSION

It has been shown that there may be some differences when comparing GPs' attitudes towards first- or second-generation immigrants to the general Slovenian population based on patients' opinions. The study showed that there are no statistically significant differences with regard to GPs' availability when comparing immigrants to the non-immigrant population of Slovenia. However, in their own perception, the second-generation immigrants experienced more negative behaviour from GPs or their staff than the non-immigrant population. First-generation immigrants have more difficulties in understanding GPs' instructions, and claim to be given insufficient appointment-time when compared to the non-immigrants. However, on the basis of the questionnaire that targeted the patients in GPs' waiting rooms, we cannot conclude that GPs' attitude towards the immigrants is indeed below the standards that is assured to the non-immigrant population.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

The data for this study was derived from Qualicopc study, Slovenia. The National Medical Ethics Committee of the Republic of Slovenia approved the study on July 12th, 2011 (no. 144/07/11).

The study was conducted in accordance with the code of Ethics of the World Medical Association (Declaration of Helsinki).

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REFERENCES

1. Pavlic DR, Brovc M, Svab I, Ahcin J, Slajpah M. Attitudes to illness and the use of health services by economic immigrants in Slovenia. Croat Med J 2007; 48: 675–83.
2. Mooren TT, Kleber RJ. The significance of experiences of war and migration in older age: long-term consequences in child survivors from the Dutch East Indies. Int Psychogeriatr 2013; 25: 1783–94.
3. Vázquez ML, Vargas I, Aller MB. The impact of the economic crisis on the health and healthcare of the immigrant population: SESPAS report 2014. Gac Sanit 2014; 28(Suppl 1): 142–6.
4. Gushulak BD, Pottie K, Roberts JH, Torres S, DesMeules M. Migration and health in Canada: health in the global village. CMAJ 2011; 183: 952–8.
5. Joshi S, Jatrana S, Paradies Y, Priest N. Differences in health behaviours between immigrant and non-immigrant groups: a protocol for a systematic review. Syst Rev 2014; 3: 61.
6. Nelson-Peterman JL, Toof R, Liang SL, Grigg-Saito DC. Long-term refugee health: health behaviors and outcomes of Cambodian refugee and immigrant women. Health Educ Behav 2015; 42: 814-23.
7. Quan H, Fong A, De Coster C, Wang J, Musto R, Noseworthy TW, et al. Variation in health services utilization among ethnic populations. CMAJ 2006; 174: 787–91.
8. Swinkels H, Pottie K, Tugwell P, Rashid M, Narasiah L. Development of guidelines for recently arrived immigrants and refugees to Canada: Delphi consensus on selecting preventable and treatable conditions. CMAJ 2011; 183: 928–32.
9. Tugwell P, Pottie K, Welch V, Ueffing E, Chambers A, Feightner J. Evaluation of evidence-based literature and formulation of recommendations for the clinical preventive guidelines for immigrants and refugees in Canada. CMAJ 2011; 183: 933–8.
10. Wickramage K, Mosca D. Can migration health assessments become a mechanism for global public health good? Int J Environ Res Public Health 2014; 11: 9954–63.

11. De Maesschalck S, Deveugele M, Willems S. Language, culture and emotions: exploring ethnic minority patients' emotional expressions in primary healthcare consultations. Patient Educ Couns 2011; 84(Suppl 3): 406–12.
12. Liu CH, Meeuwesen L, van Wesel F, Ingleby D. Why do ethnic Chinese in the Netherlands underutilize mental health care services?: evidence from a qualitative study. Transcult Psychiatry 2015; 52: 331-52.
13. Georgiades SD. Greek Immigrants in Australia: implications for culturally sensitive practice. J Immigr Minor Health 2015; 17: 1537-47.
14. Vacková J, Veleminsky Sr M, Brabcová I, Záleská V. Subjective social status in select Ukrainians, Vietnamese, and Mongolians living in the Czech Republic. Neuro Endocrinol Lett 2014; 35(Suppl 1): 90–101.
15. Verkuyten M, Martinovic B. Behind the ethnic-civic distinction: public attitudes towards immigrants' political rights in the Netherlands. Soc Sci Res 2015; 53: 34–44.
16. Selitve, Slovenija, 1. januar 2011 – končni podatki. Statistični urad RS. Available Dec 30, 2014 from: http://www.stat.si/novica_prikazi.aspx?id=4430.
17. Prebivalstvo, Slovenija, 1. januar 2014 – končni podatki. Statistični urad RS. Available Dec 30, 2014 from: http://www.stat.si/novica_prikazi.aspx?id=6200.
18. Žitnik J. Immigrants in Slovenia: integration aspects. Migracijske etnične teme 2004; 2–3: 221–42.
19. Javno veljavni izobraževalni program za odrasle: začetna integracija priseljencev (ZIP) - začetni in nadaljevalni modul. Available Nov 11, 2015 from: http://www.mss.gov.si/fileadmin/mss.gov.si/pageuploads/podrocje/odrasli/Programi/Program_odrasli_ZIP.pdf.
20. Gobec M. Health care system in Slovenia. Available Nov 11, 2015 from: https://sam.lrv.lt/uploads/sam/documents/files/Veiklos_sritys/Programos_ir_projektai/Norvegijos_parama/Slovenija_PPT/1_%20PRESENTATION%20OF%20HEALTH%20SYSTEM.pdf.
21. Izbira osebnega zdravnika. Available Nov 11, 2015 from: https://zavarovanec.zzzs.si/wps/portal/portali/azos/ioz/ioz_izbira/!ut/p/b0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOJNDF093Y39DTzdPT2MDTydfC1CAkOcDQxMDPQLsh0VAeCstwg!/.
22. Albreht T, Turk E, Toth M, Ceglar J, Marn S, Pribaković Brinovec R, et al. Health system review. Health Systems Transition 2009; 11: 1-168.
23. Zakon o azilu. Uradni list RS 2003; 134. Available Nov 11, 2015 from: https://www.uradni-list.si/1/content?id=42366.
24. Morel A, Gorjanc V, Kocijančič Pokorn N. Healthcare interpreting in Slovenia. Available Nov 11, 2015 from: https://www.openstarts.units.it/dspace/bitstream/10077/8617/1/Morel_Gorjanc_Kocijancic_IN17.pdf.
25. Szczepura A. Access to health care for ethnic minority populations. Postgrad Med J 2005; 81(Suppl 953): 141–7.
26. Fairfax CN, Feit MD. How policy improves health. Soc Work Public Health 2015; 30: 410–22.
27. Schäfer WLA, Boerma WGW, Kringos DS, De Maeseneer J, Greß S, Heinemann S, et al. QUALICOPC, a multi-country study evaluating quality, costs and equity in primary care. BMC Fam Pract 2011; 12: 115.
28. Schäfer WLA, Boerma WGW, Kringos DS, Evelyne De R, Greß S, Heinemann S, et al. Measures of quality, costs and equity in primary health care: instruments developed to analyse and compare primary health care in 35 countries. Qual Prim Care 2013; 21: 67–79.
29. Schäfer WLA, Boerma WGW, Murante AM, Sixma HJM, Schellevis FG, Groenewegen PP. Assessing the potential for improvement of primary care in 34 countries: a cross-sectional survey. Bull World Health Organ 2015; 93: 161–8.
30. de Vroome T, Martinovic B, Verkuyten M. The integration paradox: level of education and immigrants' attitudes towards natives and the host society. Culture Divers Ethnic Minor Psychol 2014; 20(Suppl 2): 166–75.
31. Luthra RR, Soehl T. From parent to child?: transmission of educational attainment within immigrant families: methodological considerations. Demography 2015; 52(Suppl 2): 543–67.
32. Galarneau D, Morissette R. Immigrants' education and required job skills. Stat Can 2008; 75-001-X: 5–18.
33. Kenny P, De Abreu Lourenco R, Wong CY, Haas M, Goodall S. Community preferences in general practice: important factors for choosing a general practitioner. Health Expect 2016; 19: 26-38.
34. Diaz E, Kumar BN. Differential utilization of primary health care services among older immigrants and Norwegians: a register-based comparative study in Norway. BMC Health Serv Res 2014; 14: 623.
35. Diaz E, Calderón-Larrañaga A, Prado-Torres A, Poblador-Plou B, Gimeno-Feliu LA. How do immigrants use primary health care services?: a register-based study in Norway. Eur J Public Health 2015; 25: 72–8.
36. Moullan Y, Jusot F. Why is the "healthy immigrant effect" different between European countries? Eur J Public Health 2014; 24: 80–6.
37. Gotsens M, Malmusi D, Villarroel N, Vives-Cases C, Garcia-Subirats I, Hernando C, et al. Health inequality between immigrants and natives in Spain: the loss of the healthy immigrant effect in times of economic crisis. Eur J Public Health 2015; 25: 923-9.
38. Ngwakongnwi E, Hemmelgarn BR, Musto R, Quan H, King-Shier KM. Experiences of French speaking immigrants and non-immigrants accessing health care services in a large Canadian city. Int J Environ Res Public Health 2012; 9: 3755–68.
39. Bachmann V, Völkner M, Bösnerr S, Donner-Banzhoff N. The experiences of Russian-speaking migrants in primary care consultations. Dtsch Arztebl Int 2014; 111: 871–6.
40. Švab I, Petek Šter M, Kersnik J, Živčec Kalan G, Car J. Presečna študija o delu zdravnikov splošne medicine v Sloveniji. Zdrav Var 2005; 44: 183–92.
41. Statistični urad republike Slovenije. Zdravje in zdravstveno varstvo v Sloveniji. Available Nov 15, 2015 from: http://www.stat.si/doc/pub/Zdravje%20in%20zdravstveno%20varstvo-slo.pdf.
42. Kalan Živčec G. Pregled obremenitev zdravnikov družinske medicine. Available Nov 15, 2015 from: http://www.mf.uni-lj.si/media-library/2015/09/5f59996dc59c97b4baf57d12bc263c8e.pdf.
43. Mittal D, Corrigan P, Sherman MD, Chekuri L, Han X, Reaves C, et al. Healthcare providers' attitudes toward persons with schizophrenia. Psychiatr Rehabil J 2014; 37(Suppl 4): 297–303.
44. Imbeau D, Bouchard S, Terradas MM, Simard V. Attitudes of general physicians and family medicine residents towards patients with borderline personality disorder. Sante Ment Que 2014; 39(Suppl 1): 273–89.
45. Fiske ST. Warmth and competence: stereotype content issues for clinicians and researchers. Can Psychol 2012; 53(Suppl 1): 14–20.
46. Kirmayer LJ, Narasiah L, Munoz M, Rashid M, Ryder AG, Guzder J, et al. Common mental health problems in immigrants and refugees: general approach in primary care. CMAJ 2011; 183: 959–67.
47. Anderson KK, Cheng J, Susser E, McKenzie KJ, Kurdyak P. Incidence of psychotic disorders among first-generation immigrants and refugees in Ontario. CMAJ 2015; 187: 279–86.
48. Schouler-Ocak M, Aichberger MC, Penka S, Kluge U, Heinz A. Mental disorders of immigrants in Germany. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschut 2015; 58: 527–32.
49. Martinez Tyson D, Arriola NB, Corvin J. Perceptions of depression and access to mental health care among Latino immigrants: looking beyond one size fits all. Qual Health Res 2015: pii 1049732315588499.
50. Goddard M, Smith P. Equity of access to health care services: theory and evidence from the UK. Soc Sci Med 2001; 53(Suppl 9): 1149–62.
51. Benyamini Y, Boyko V, Blumstein T, Lerner-Geva L. Health, cultural and socioeconomic factors related to self-rated health of long-term Jewish residents, immigrants, and Arab women in midlife in Israel. Women Health 2014; 54(Suppl 5): 402–24.

52. Bermejo I, Hölzel LP, Kriston L, Härter M. Barriers in the attendance of health care interventions by immigrants. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz 2012; 55(Suppl 8): 944–53.
53. Krupic F, Krupic R, Jasarevic M, Sadic S, Fatahi N. Being immigrant in their own country: experiences of Bosnians immigrants in contact with health care system in Bosnia and Herzegovina. Mater Sociomed 2015; 27(Suppl 1): 4–9.
54. Juckett G, Unger K. Appropriate use of medical interpreters. Am Fam Phys 2014; 90(Suppl 7): 476–80.
55. Flores G. The impact of medical interpreter services on the quality of health care: a systematic review. Med Care Res Rev 2005; 62(Suppl 3): 255–99.
56. Hasbún Avalos O, Pennington K, Osterberg L. Revolutionizing volunteer interpreter services: an evaluation of an innovative medical interpreter education program. J Gen Intern Med 2013; 28(Suppl 12): 1589–95.
57. Vander Wielen LM, Enurah AS, Rho HY, Nagarkatti-Gude DR, Michelsen-King P, Crossman SH, et al. Medical interpreters: improvements to address access, equity, and quality of care for limited-English-proficient patients. Acad Med 2014; 89(Suppl 10): 1324–7.
58. Ahmed R, Bowen J, O'Donnell W. Cultural competence and language interpreter services in Minnesota: results of a needs assessment survey administered to physician members of the Minnesota Medical Association. Minn Med 2004; 87(Suppl 12): 40–2.

10.1515/sjph-2016-0021 Zdrav Var 2016; 55(3): 166-173

Jakič M, Rotar Pavlič D. Patients' perception of differences in general practitioners' attitudes toward immigrants compared to the general population: QUALICOPC Slovenia. Zdrav Var 2016; 55(3): 166-173

CROSS-CULTURAL ADAPTATION AND VALIDATION OF THE DISEASE SPECIFIC QUESTIONNAIRE OQLQ IN SERBIAN PATIENTS WITH MALOCCLUSIONS

MEDKULTURNA PRILAGODITEV IN POTRDITEV VPRAŠALNIKA O KAKOVOSTI ŽIVLJENJA (OQLQ) SRBSKIH PACIENTOV Z MALOKLUZIJO

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ABSTRACT

Keywords:
malocclusions, quality of life, OQLQ, validation

Introduction. Dentofacial disorders may potentially significantly affect the quality of life. Objectives of this study were to validate translated and culturally adapted Orthognatic Quality of Life Questionnaire (OQLQ) on a cohort of Serbian patients with malocclusions.

Methods. The questionnaire was validated in 111 consecutive patients with malocclusions, seen between December 2014 and February 2015 at the Clinic of Orthodontics, Faculty of Dental Medicine, University of Belgrade. Clinical validity was assessed comparing the mean scores for the four subscales of the OQLQ and mean PAR pre-treatment score. In order to assess whether the allocation of items in the subscales corresponds to their distribution in the original questionnaire, an exploratory factor analysis (principal component analysis with varimax rotation) was conducted.

Results. The results of the internal consistency analysis demonstrated good relationships between the items; Cronbach's alpha coefficients for the four subscales were highly significant ($p<0.001$) (0.88-0.91). All items were significantly correlated between baseline and the retest (6 weeks after). The correlations between the PAR and all four domains of the OQLQ were all significant ($p<0.01$). The loading weights obtained in the exploratory factor analysis showed that this model revealed four factors with eigenvalue greater than 1, explaining the 64.0% of the cumulative variance. The majority of the items (86.4%) in the Serbian version of the OQLQ presented the highest loading weight in the subscales assigned by the OQLQ developer.

Conclusions. The psychometric properties of the OQLQ (Serbian version) have exceptional internal consistency and reproducibility as an instrument for evaluation of dental malocclusions. Additionally, this questionnaire may be useful as a supplementary outcome measure in persons with malocclusions.

IZVLEČEK

Ključne besede:
malokluzije, kakovost življenja, vprašalnik OQLQ, potrditev

Uvod*. Dentofacialne nepravilnosti lahko močno vplivajo na kakovost življenja. Cilj te študije je na podlagi kohortne raziskave med srbskimi pacienti z malokluzijo potrditi preveden in kulturno prilagojen vprašalnik o kakovosti življenja po ortognatskem kirurškem posegu (OQLQ).*

Metode*. Vprašalnik je bil potrjen s 111 zaporednimi pacienti z malokluzijo, ki so med decembrom 2014 in februarjem 2015 obiskali Kliniko za ortodontijo (Fakulteta za dentalno medicino, Univerza v Beogradu). Klinična potrditev je bila dosežena s primerjavo povprečnih rezultatov štirih podlestvic vprašalnika in povprečnega nominalnega rezultata pred posegom. Opravljena je bila raziskovalna analiza dejavnikov (analiza glavnih komponent z rotacijami po metodi Varimax), da bi se ustrezno ovrednotila porazdelitev elementov v podlestivici, ki ustreza njihovi porazdelitvi v izvirnemu vprašalniku.*

Rezultati*. Rezultati notranje analize skladnosti so pokazali dobro razmerje med elementi, predvsem so za štiri podlestvice pomembni koeficienti Cronbach alfa ($p<0,001$) (0,88-0,91). Vsi elementi se se ustrezno ujemali med osnovnim in ponovnim preizkusom (6 tednov pozneje). Povezave med nominalnimi rezultati in vsemi štirimi domenami vprašalnika so bile pomembne ($p<0,01$). Naležne teže, pridobljene z raziskovalno analizo dejavnikov, so dokazale, da je ta model prikazal štiri dejavnike z lastno vrednostjo višjo od 1, kar obrazloži 64,0% kumulativnega odmika. Večina elementov (86,4%) v srbski različici vprašalnika predstavlja najvišje naležne teže na podlestvicah, ki jih določa razvijalec vprašalnika.*

Zaključki*. Psihometrične lastnosti vprašalnika OQLQ (srbska različica) imajo kot orodje za ovrednotenje dentalnih malokluzij izjemno notranjo doslednost in ponovljivost. Poleg tega je lahko ta vprašalnik zelo uporaben kot dopolnilno merilo izida kirurškega posega pri osebah z malokluzijo.*

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1 INTRODUCTION

Severe dental malocclusions should be most frequently treated with combined orthodontic and surgical treatment (1-4). Dentofacial disorders may potentially significantly affect the quality of life (1, 5, 6). It has to be emphasized that impaired health-related quality of life (HRQoL), as a consequence of oral diseases and disorders, may affect various aspects of life in a large number of individuals (7). Until now, several definitions of HRQoL have been suggested, and there is no universal agreement regarding the conceptualization of this concept. However, today it is widely accepted that the HRQoL is ''the measure in which the assigned value is modified to the duration of the life in function of the perception of physic, psychological and social limitations and the decrease of opportunities due to the disease, its sequels, the treatment and/or the health policies'' (8). It has to be emphasized that facial and dental aesthetics have a significant impact on personal and professional relations, especially among child and adolescent subjects (9). Therefore, disturbed HRQoL, along with impaired function and aesthetics, warrants adequate orthodontic or orthognatic treatment. Having in mind all the above-mentioned, it is crucial for the dentist to have a valid and reliable tool for measuring HRQoL that is focused on dentofacial disorders' influences on interpersonal relationships.

Although quality of life may be defined as a person's sense of wellbeing (10), there is no generally accepted definition of HRQoL. There seems to be a consensus that aspects of physical, functional, social and psychological health should be included in HRQoL assessments. However, research in the field of orthodontics and HRQoL is still rather insufficient. Studying the impact of oral diseases on individuals has made major progress during the 1980s (7). The increasing necessity for measures of HRQoL in oral diseases and conditions has led to the development of a number of various instruments, such as the Oral Health Impact Profile (OHIP) (11), Oral Impact on Daily Performance (OIDP) (12) and Orthognatic Quality of Life Questionnaire (OQLQ) (1).

Investigating the outcomes of the treatment of dental malocclusions has concentrated predominantly on measuringtraditional indices. These clinical objective indicators are important, but should be necessarily supplemented with HRQoL measures, because HRQoL does not always correlate with objective findings (3). Patients sometimes consider measures of HRQoL, which are the subjective perception of their overall status, as more important than impaired outcome based on clinician's examination. There are two groups of measures for the assessment of HRQoL: generic and specific measures. The medical outcomes study, a 36-item short form health survey (SF-36), is the most widely used patient-based generic measure of health (13). The main advantage of generic measures is that they allow comparisons among different populations and various illnesses. On the other hand, specific measures focus on specific conditions or diseases. Therefore, they are potentially more responsive to small, but clinically important changes in health.

Patients presenting with dental malocclusions may require a course of fixed orthodontic appliances, in certain cases, followed by a surgery. These patients are usually in the younger age group, and a specific instrument for their problem has been developed in 2000 (1). Originally, this questionnaire, OQLQ, was developed as a condition-specific quality of life measure to be used in studies investigating the outcome of orthognatic treatment.

The objective of this study was to validate translated and culturally adapted OQLQ on a cohort of Serbian patients with dental malocclusions. To the best of our knowledge, in order to assess construct validity, for the first time in the OQLQ validation studies, factor analysis was performed.

2 METHODS

The sample was selected by convenience and included all incident consecutive patients getting on a course of therapy related to malocclusions, namely orthodontic treatment and potentially orthognatic surgery at the Clinic for Orthodontics, the Faculty of Dental Medicine, University of Belgrade, Belgrade, Serbia, from December 2014 to April 2015. These subjects were considered for inclusion in the study. Eligible patients satisfied the following criteria: the presence of malocclusions, age 18+ years, and written informed consent. At the time when the questionnaires were distributed, all selected patients were undergoing clinical examinations. Since the complete clinical and radiological findings were not available, subjects were informed of treatment options. Exclusion criteria: 1) patients already included in orthodontic treatment, and 2) the presence of congenital deformities, such as cleft lip and palate, and syndromes involving facial changes.

The study was approved by the Ethical Committee of Faculty of Dental Medicine of the University of Belgrade.

Before enrolment, all the subjects provided signed informed consent.

Out of 148 patients, seen in this period at the Clinic, 117 fulfilled inclusion criteria.

In all patients included in this study, in order to assess the patients' morphological deformities, we used PAR (Peer Assessment Rating) pre-treatment score, measured by dentist (LJV), and trained in the PAR (14). Values for the components of PAR pre-treatment score were recorded and calculated.

In this investigation, HRQOL was measured by OQLQ (1). This instrument was developed for orthognatic patients, and it consists of 22 statements marked on a 4-point scale for each statement, where 1 meant the issue covered in the statement ''bothers them a little'', 4 meant ''it bothered them a lot'', and 2 and 3 were in between (1). An option of "not applicable" existed for those not affected by the issue covered in that statement. The 22 items contribute to the following four dimensions: social aspects, facial aspects, oral function and awareness of dentofacial aesthetics (1). The OQLQ dimensions are scored so that lower scores indicate a better quality of life and higher scores represent a poorer quality of life.

According to the internationally accepted methodology for the cultural adaptation of an HRQOL questionnaire, we have used a standard back-translation methodology for the production of the Serbian version of OQLQ. The main objective of this translation was linguistic validation of OQLQ in Serbian. The translation involved the following steps: (a) Translation of the original English OQLQ questionnaire into Serbian, and production of a version that was semantically and conceptually as close as possible to the original questionnaire. A professional translator performed this "forward translation". (b) In the next "backward translation" step, these questions were translated back into English. Two qualified translators, quality of life experts and clinicians have discussed controversial items to generate a version of OQLQ which would be most appropriate for the cultural environment of Serbia and acceptable for testing on patients with malocclusions. (c) In order to check Serbian population's understanding and interpretation of the translated items, the questionnaire was tested on 10 patients with malocclusions of wide range of severity. The results of these tests have been discussed in the same group of experts. Additionally, in this step, patients with malocclusions were also included and their suggestions were considered. This stage led to the final version of the OQLQ. (d) The final version of the questionnaire was tested on 20 persons with malocclusions. Furthermore, the patients were asked additional questions regarding the simplicity, clarity and relevance of the questions.

The OQLQ questionnaire was filled in by the patients in the presence of a physician who assisted if necessary. In order to assess patient' s acceptability of OQLQ, the mean time required for completing the questionnaire, the proportion of missing data within each scale and assistance in reading/writing were also noted.

Of the 111 respondents, 78 were asked to complete exactly the same questionnaire in 6 weeks following the first completion, in order to assess test-retest reliability, according to the author's suggestion (1).

2.1 Statistical Analysis

Clinical validity of this questionnaire was assessed comparing the mean scores for the four domains of the OQLQ and the mean PAR pre-treatment score. Pearson's (r) correlation coefficient was used to investigate the relationship between the OQLQ scores and the main clinical and demographic variables. Validity of the questionnaire may be determined in various ways. Content validity refers to how accurately an assessment or measurement instrument relates to the various aspects of the specific construct in question (15). Additionally, content validity is an important research methodology term that refers to how well a test measures the behaviour for which it is intended. In clinical studies, content validity refers to the association between instrument items and objective clinical characteristics of a certain syndrome.

It is well known that when items are used to form a scale, they need to have internal consistency. Since it is supposed that all items should measure the same variable, correlation with each other should exist, and a useful coefficient for assessing it is Cronbach's alpha (16). Therefore, internal reliabilities of the Serbian version of OQLQ were assessed for multiple item scales by using Cronbach's alpha coefficient (16), which ranges from 0 to 1, the latter meaning perfect reliability. Values of alpha coefficient above 0.9 denote excellent internal consistency.

Reproducibility of the OQLQ questionnaire was evaluated using the Spearman-Brown reliability coefficient. Reproducibility is one of the main characteristics of the research method, and by definition it relates to the ability of an entire study to be duplicated, either by the same researcher or by other research groups which work independently (17).

In order to assess whether the allocation of items in the domain corresponds to their distribution in the original questionnaire, an exploratory factor analysis (principal component analysis with varimax rotation) was conducted. A factor was considered important if its eigenvalue exceeded 1.0.

3 RESULTS

Out of 117 patients who met the inclusion criteria, 111 agreed to participate (response rate=94.9%), 46 of which (41.4%) were male and 65 (58.6%) female, with age ranging from 18 to 34 years old, with an average age of 22.3±4.4 years.

All 111 patients with malocclusion were able to read and comprehend the questionnaire. The mean time to complete the questionnaire was 3.5 minutes (range, 2.0-8.0 minutes). Two (1.8%) patients needed help to complete the questionnaire; none of the patients required help reading some or all of the items, and 2 patients (1.8%) required assistance in writing the responses. There were no missing items.

The results of the internal consistency analysis are shown in Table 1. A low item-total correlation indicates that the item was not related to the remaining items in the scale. Only question 1 in the second component and question 5 in the third component gave values bellow 0.50, while all other items gave values between 0.52 and 0.78. This suggests good relationships between the items. The alpha coefficients for the four components were highly (between 0.88 and 0.91) significant (p<0.001).

Table 1. Internal consistency analysis of the Serbian version of the Orthognathic Quality of Life Questionnaire (OQLQ).

Subscale/item	Item-total correlation	Alpha coefficient for each component	Intra-class correlation coefficient
Social aspects of deformity			
15. Cover mouth when meeting people	0.78	0.91	0.91 (p=0.001)
16. Worry about meeting people	0.68		
17. Worry people will make hurtful comments	0.77		
18. Lack confidence socially	0.74		
19. Do not like smiling	0.66		
20. Get depressed about appearance	0.73		
21. Sometimes think people are staring	0.60		
22. Comments about appearance upset me	0.70		
Facial aesthetics			
1. Self-conscious about appearance of my teeth	0.42	0.85	0.90 (p=0.001)
7. Don’t like seeing side view of face (profile)	0.67		
10. Dislike having photograph taken	0.59		
11. Dislike being seen on video	0.72		
14. Self-conscious about appearance	0.60		
Oral function			
2. Problems biting	0.52	0.75	0.88 (p=0.001)
3. Problems chewing	0.71		
4. Avoid eating some foods	0.53		
5. Don’t like eating in public	0.30		
6. Pains in face/jaw	0.55		
Awareness of facial deformity			
8. Spend time studying face	0.67	0.85	0.89 (p=0.001)
9. Spend time studying teeth	0.69		
12. Stare at people’s teeth	0.73		
13. Stare at people’s faces	0.65		

Clinical validity was assessed through comparison with PAR pre-treatment score

All correlations between the PAR and all four domains of the OQLQ were significant (Table 2).

The test-retest analysis was performed by comparing the two sets of scores for each of the components using the intra-class correlation coefficient (results shown in Table 1). Test-retest reliability of the scale is evaluated by Spearman-Brown reliability coefficient (ranged from 0.88 to 0.91, for 4 subscales). All items in baseline and the retest questionnaire significantly correlated. The mean values of both test and retest (6 weeks after baseline) of the four subscales of OQLQ are presented in Table 3.

Table 2. Clinical validity of the Serbian version of the Orthognathic Quality of Life Questionnaire (OQLQ).

Subscales of OQLQ	Peer Assessment Rating (PAR) pre-treatment score	
	Correlation coefficient	p
Social aspects of deformity	0.274	0.005
Facial aesthetics	0.275	0.004
Oral function	0.276	0.004
Awareness of facial deformity	0.259	0.007

Table 3. Descriptive statistics of the Serbian version of the Orthognathic Quality of Life Questionnaire (OQLQ) at baseline and after 6 weeks.

Subscale/item	Test values		Retest values	
	Mean ±SD	Range	Mean ±SD	Range
Subscales of OQLQ	6.7±7.7	0-30	6.6±7.7	0-29
Social aspects of deformity	6.8±5.3	0-19	6.4±5.5	0-20
Facial aesthetics	5.0±4.3	0-17	5.2±4.8	0-16
Oral function	5.9±4.6	0-16	5.7±4.9	0-16
Awareness of facial deformity				

SD-standard deviation

The loading weights obtained in the exploratory factor analysis are shown in Table 4. This model revealed four factors with eigenvalue greater than 1, explaining the 64.0% of the cumulative variance. The majority of the items (86.4%) in the Serbian version of the OQLQ presented the highest loading weight in the domains assigned by the OQLQ developers: „Social aspects of deformity “(8/8), „Facial aesthetics “(4/5), „Oral function “(3/5), and „Awareness of facial deformity “(4/4). None of the scales corresponded fully to the original. The domain „Social aspects of deformity“ replicated original eight items (no. 15-22) with one additional question (no.1), which originally belongs to „Facial aesthetics “. Thus, the factor „Facial aesthetics“ lost item no.1, in Serbian version of OQLQ, and comprises four items (no. 7, 10, 11 and 14) with the highest loading in that domain. Furthermore, scale „Oral function“ replicated 3 of 5 questions, while two of the items were derived to the „Awareness of facial deformity“. Consequently, in the Serbian version of the OQLQ, the factor „ Awareness of facial deformity“ was extended with these two additional questions containing 8 items.

Table 4. Exploratory factor analysis of the Serbian version of the Orthognathic Quality of Life Questionnaire (OQLQ).

Original OQLQ items	Factor 1	Factor 2	Factor 3	Factor 4
	Social aspects of deformity	Facial aesthetics	Oral function	Awareness of facial deformity
Social aspects of deformity				
15. Cover mouth when meeting people	**.856**	.165	.056	.162
16. Worry about meeting people	**.821**	.162	-.092	.142
17. Worry people will make hurtful comments	**.802**	.117	.279	.052
18. Lack confidence socially	**.729**	.163	.295	.136
19. Do not like smiling	**.618**	.408	.199	.011
20. Get depressed about appearance	**.665**	.252	.300	.191
21. Sometimes think people are staring	**.560**	.075	.520	.058
22. Comments about appearance upset me	**.624**	.298	.288	.147
Facial aesthetics				
1. Self-conscious about appearance of my teeth	.511	.263	.323	.065
7. Don't like seeing side view of face (profile)	.157	**.790**	.275	.117
10. Dislike having photograph taken	.183	**.644**	.203	.013
11. Dislike being seen on video	.206	**.804**	.166	.052
14. Self-conscious about appearance	.338	**.495**	.437	.307
Oral function				
2. Problems biting	.034	.008	**.596**	.550
3. Problems chewing	.115	.033	**.433**	.358
4. Avoid eating some foods	.145	.047	.056	.784
5. Don't like eating in public	.277	.325	**.628**	.347
6. Pains in face/jaw	.154	.332	.075	.625
Awareness of facial deformity				
8. Spend time studying face	.347	.197	.421	**.494**
9. Spend time studying teeth	.394	.155	.487	**.429**
12. Stare at people's teeth	.390	.271	.204	**.625**
13. Stare at people's faces	.212	.305	.147	**.713**

Highest factor loadings for each factor are in the bold script; factor loadings corresponding to the factors in the original version are marked with a grey background; factor loadings with a black background indicate highest loadings on other factors than the original ones.

4 DISCUSSION

The patients with malocclusions have been demonstrated to have lower disease specific quality of life (1, 18, 19), although when using the generic instruments, their quality of life was equal to that of the general population (20).

This is the first report of using a disease-specific quality of life measure for adult patients with malocclusions looking for orthodontic or orthognatic treatment in Serbia. OQLQ was a well-accepted questionnaire and easy to administer in Serbian population. None of the items were found to be embarrassing tothe patients. This result is not different from the results obtained from English, Brazilian, Japanese and German patients with malocclusions (1, 18, 20, 21). Only about 2% of patients in our study needed help in completing the questionnaire. In the Serbian validation study of OQLQ, 100% of the patients found that the questionnaire was understandable. In our study, there were no missing data. Similar findings have been previously consistently shown across several studies (18, 20, 21).

Cunningham et al. (22) demonstrated significant restrictions in the quality of life in their study of 62 patients with dentofacial deformity, performed prior to surgical treatment (23). Our mean values for all four categories of OQLQ are lower than in the previously published studies (18, 23). The data varies extensively, although certain associations exist. Thus, patients in the two above mentioned studies complained of social aspects of deformity (Mean score in Cunningham's study (1)=15.07; Mean score in Bock's study (18)=14.73) as most disturbing, which is partially in line with our study. This demonstrates that our patients ranged facial aesthetics (Mean score = 6.8) as the most significant factor influencing quality of life, followed by social aspects (Mean score=6.7). While German patients significantly complained of functional impairment, our patients, as well as English patients, found it more appropriate to complain of facial aesthetic and social aspects of deformity. These findings might be attributed to social and cultural characteristics of Serbian society. Thus, the influence of cultural tradition cannot be ignored regarding this matter.

Test-retest reliability of the scale, evaluated by Spearman-Brown reliability coefficient (ranged from 0.88 to 0.91, for 4 subscales), was outstanding, suggesting that the subscale scores remained stable over the 6-week period. Clinical validity was assessed through comparison with PAR pre-treatment score. In our investigation, the PAR correlated significantly with all four domains of the OQLQ. It has to be mentioned that content-validity bias might occur when the content of a test is comparatively more difficult for one group of persons than for others. Furthermore, item-selection bias, a subcategory of this bias, refers to the use of individual test items that are more adequate for one group's language and cultural experiences. Finally, construct-validity bias, which refers to whether a questionnaire accurately measures what it was designed to measure, should also be considered in validation studies.

Based on the factor analysis of the OQLQ, 22 items in the scale were divided into four separate subscales, as follows: Factor 1 subgroup comprised ''Social aspects of deformity", Factor 2 subgroup consisted of questions related to ''Facial aesthetics", Factor 3 subgroup comprised items regarding ''Oral function", and Factor 4 subgroup comprised items related to ''Awareness of facial deformity". To our best knowledge, none of the previously published OQLQ validation studies included factor analysis. In our validation study, there is a slight difference between the results of the factor analysis in the Serbian OQLQ patient set and certain patterns in the original OQLQ version1 regarding item classification in the four subgroups. That is, "Self-conscious about appearance of my teeth" was classified in the ''Facial aesthetics" subgroup, while in our study the rotated component matrix classified this notion as "Social aspects of deformity". Another minor discrepancy involves "Avoid eating some foods" and '' Pains in face/jaw", originally classified in the subgroup ''Oral function", which according to our factor analysis, belongs to the subgroup ''Awareness of facial deformity". It might be assumed that these mild discrepancies could be related to linguistic and cultural specificities. However, it has to be emphasized that the Serbian version of OQLQ supports original item structure and classification in four subgroups.

We have successfully adapted an internationally validated questionnaire for Serbian population (OQLQ-SR). In this study, we have demonstrated that subjects with malocclusions experience functional, aesthetic, and social impairment. Additionally, in line with this notion, a recent systematic review (24) of quantitative studies for the data related to the impact of malocclusions on oral HRQoL in children and adolescents showed that malocclusions have negative effects on oral HRQoL.

Future directions in clinical practice should be based on the notion that this instrument might be used by dentists concurrently with clinical and radiological findings, to potentially make the optimal treatment decision. Furthermore, longitudinal studies of pre- and post-therapy clinical and psychological characteristics of orthognatic patients should be performed in order to predict the treatment outcome.

There are certain limitations in this study. Our study could have benefitted from a larger sample size. As already mentioned, it will be necessary to examine HRQoL of patients after treatment, and assess the results longitudinally. It would potentially lead to the conclusion whether the difference in the improvement of HRQoL might exist between surgical and conservative orthodontic treatment.

In conclusion, the psychometric properties of the cross-culturally adapted 22-item OQLQ (Serbian version) have exceptional internal consistency and reproducibility as an instrument for the evaluation of dental malocclusions. To the best of our knowledge, in order to assess construct validity, in our survey, for the first time in the OQLQ validation studies, factor analysis was performed. The OQLQ (Serbian version) characteristics are similar to those found in different cultural backgrounds. Based on the above mentioned, this quality of life instrument may potentially contribute to the selection of the best orthodontic treatment options for improving HRQoL of patients with malocclusions.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

Received from the Ethical Committee of the Faculty of Dental Medicine of the University of Belgrade.

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AUTHOR'S ROLES

Ljiljana Vucic, Branislav Glisic and Uros Vucic contributed to conception and design, acquired data, analyzed and interpreted data and drafted the article. Darija Kisic-Tepavcevic, Jelena Drulovic and Tatjana Pekmezovic contributed to conception and design, performed statistical analysis and provided critical revision of the intellectual content of the manuscript. All authors provided final approval of the version to be published.

REFERENCES

1. Cunningham SJ, Garratt AM, Hunt NP. Development of a condition-specific quality of life measure for patients with dentofacial deformity. Community Dent Oral Epidemiol 2000; 28: 195-201.
2. Rankin M, Borah GL, Perry AW, Wey PD. Quality-of-life outcomes after cosmetic surgery. Plast Reconstr Surg 1988; 102: 2139-45.
3. Cunningham SJ, Hunt NP. Quality of life and its importance in orthodontics. J Orthod 2001; 28: 152-8.
4. Al-Ahmad HT, Al-Sadi WS, Al-Omari IK, Al-Bitar ZB. Condition-specific quality of life in Jordanian patients with dentofacial deformities: a comparison of generic and disease-specific measures. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009; 107: 49-55.
5. Chen M, Feng ZC, Liu X, Li ZM, Cai B, Wang DW. Impact of malocclusion on oral health-related quality of life in young adults. Angle Orthod 2015; 85: 986-91.
6. Stagles C, Popat H, Rogers S. Factors influencing patient-reported quality of life in pretreatment orthognathic surgery patients. Angle Orthod 2016; 86: 331-6.
7. Gift HC, Redford M. Oral health and the quality of life. Clin Geriatr Med 1992; 8: 673-83.
8. Patrick D, Erickson P. Health policy, quality of life: health care evaluation and resource allocation. New York: Oxford University Press, 1993.
9. Rusanen J, Lahti S, Tolvanen M, Pirttiniemi P. Quality of life in patients with severe malocclusion before treatment. Eur J Orthod 2010; 32: 43-8.
10. Locker D, Miller Y. Subjectively reported oral health status in an adult population. Community Dent Oral Epidemiol 1994; 22: 425-30.
11. Slade GD, Spencer AJ. Development and evaluation of the Oral Health Impact Profile. Community Dent Health 1994; 11: 3-11.
12. Tsakos G, Marcenes W, Sheiham A. Evaluation of a modified version of the index of Oral Impacts On Daily Performances (OIDP) in elderly populations in two European countries. Gerodontology 2001; 18: 121-30.
13. Ware JE, Snow KK, Kosinski M, Gandek B. SF-36 health survey: manual and interpretation guide. Boston, MA: Nimrod Press, 1993.
14. Richmond S, Shaw WC, O'Brien KD, Buchanan IB, Jones R, Stephens CD, et al. The development of the PAR index (Peer Assessment Rating): reliability and validity. Eur J Orthod 1992; 4: 125-39.
15. Lawshe CH. A quantitative approach to content validity. Pers Psychol 1975; 28: 563-75.
16. Bland JM, Altman DG. Cronbach's alpha. Br Med J 1997; 317: 572.
17. Begley CG. Reproducibility: six flags for suspect work. Nature 2013; 497: 433-4.
18. Bock J, Odemar F, Fuhrmann RAW. Assessment of quality of life in patients undergoing orthognatic surgery. J Orofac Orthop 2009; 70: 407-19.
19. Spalj S, Lajnert V, Ivankovic L. The psychosocial impact of dental aesthetics questionnaire--translation and cross-cultural validation in Croatia. Qual Life Res 2014; 23: 1267-71.
20. Tajima M, Kohzuki M, Azuma S, Saeki S, Meguro M, Sugawara J. Difference in quality of life according to the severity of malocclusion in Japanese orthodontic patients. Tohoku J Exp Med 2007; 212: 71-80.
21. De Araujo A, Miguel J, Gava E, De Oliveira BH. Translation and cross-cultural adaptation of an instrument designed for the assessment of quality of life in orthognatic patients. Dental Press J Othod 2013; 18: 99-106.
22. Cunningham SJ, Garratt AM, Hunt NP. Development of a condition-specific quality of life measure for patients with dentofacial deformity: II - validity and responsiveness testing. Community Dent Oral Epidemiol 2002; 30: 81-90.
23. Cunningham SJ, Hunt NP, Feinmann C. Psychological aspects of orthognathic surgery: a review of the literature. Int J Adult Orthodon Orthognath Surg 1995; 10: 159-72.
24. Dimberg L, Arnrup K, Bondemark L. The impact of malocclusion on the quality of life among children and adolescents: a systematic review of quantitative studies. Eur J Orthod 2015; 37: 238-47.

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UNDER-REPORTING OF SEXUALLY TRANSMITTED INFECTION WITH *CHLAMYDIA TRACHOMATIS* - A REVISION OF SURVEILLANCE SYSTEM IS REQUIRED

NEPOPOLNA PRIJAVA SPOLNO PRENESENE OKUŽBE Z BAKTERIJO *CHLAMYDIA TRACHOMATIS* - POTREBNA JE REVIZIJA SISTEMA EPIDEMIOLOŠKEGA SPREMLJANJA

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ABSTRACT

Keywords:
surveillance, chlamydia infection, underreporting, Slovenia

Introduction. To consider whether a revision of the national chlamydia surveillance system is needed, the objectives were to estimate the proportion of laboratory confirmed cases at the Institute of Microbiology and Immunology (IMI) not reported to the National Institute of Public Health (NIPH), and to assess the completeness of reporting for individual data items.

Methods. The dataset with information about the cases diagnosed at the IMI during 2007-2010, and the national chlamydia surveillance data at the NIPH, were linked using SOUNDEX code and the date of birth as unique identifier. The proportion of unreported cases was calculated. The proportions of records with missing data for individual variables were estimated for all reported cases during the same period. Chlamydia testing and reported rates for the period 2002-2010 were presented.

Results. Of 576 laboratory confirmed chlamydia cases at the IMI during 2007-2010, 201 were reported to the NIPH, corresponding to 65.1% of the overall underreporting (50.4% among dermatovenerologists, 90.1% among gynaecologist and 100% among other specialists). Item response was above 99% for demographic variables and from 69% to 81% for sexual behaviour variables. Higher testing rates corresponded to higher diagnosed rates.

Conclusions. Surveillance data underestimated diagnosed chlamydia infection rates. Mandatory reporting of cases by laboratories with less variables, including unique identifier, gender, date of diagnosis, and reporting physician specialty, together with numbers of tests performed (for estimating testing and positivity rates) would simplify the surveillance system and eliminate underreporting of laboratory confirmed cases, while still providing necessary information for public health policies.

IZVLEČEK

Ključne besede:
epidemiološko spremljanje, klamidijska okužba, nepopolna prijava, Slovenija

***Uvod**. Da bi presodili, ali je treba spremeniti nacionalni sistem epidemiološkega spremljanja spolno prenesene klamidijske okužbe, je bilo treba oceniti delež laboratorijsko potrjenih primerov na Inštitutu za mikrobiologijo in imunologijo (IMI) Medicinske fakultete Univerze v Ljubljani v obdobju 2007-2010, ki niso bili prijavljeni Nacionalnemu inštitutu za javno zdravje (NIJZ), in med vsemi prijavljenimi primeri v Sloveniji oceniti deleže manjkajočih podatkov za vse spremenljivke.*

***Metode**. Podatki laboratorijsko potrjenih primerov klamidijske okužbe na IMI v obdobju 2007-2010 so bili povezani s podatki nacionalne zbirke o prijavljenih primerih na NIJZ z uporabo šifre Soundex (šifriran priimek) in datuma rojstva, ki sta služila kot enoten identifikator. Izračunan je bil delež neprijavljenih primerov v celoti in glede različnih specializacij zdravnikov. Ocenjeni so bili deleži z manjkajočimi podatki za posamezne spremenljivke med vsemi prijavljenimi primeri v istem obdobju. Prikazane so tudi letne stopnje testiranja in prijavne stopnje klamidijske okužbe za obdobje 2002-2010 na osnovi podatkov iz nacionalne zbirke na NIJZ.*

***Rezultati**. Od skupno 576 laboratorijsko potrjenih primerov klamidijske okužbe na IMI v obdobju 2007-2010 je bil na NIJZ prijavljen le 201 primer, kar pomeni, da kar 65,1% laboratorijsko potrjenih primerov ni bilo prijavljenih. Dermatovenerologi niso prijavili 50,4% primerov, ginekologi 90,1% primerov, ostali specialisti pa niso prijavili nobenega primera laboratorijsko potrjene klamidijske okužbe. Pri prijavljenih primerih NIJZ v istem obdobju so bili podatki zelo popolni pri demografskih spremenljivkah (>99% prijav je imelo vse podatke), medtem ko je bilo poročanje pri spremenljivkah o spolnem vedenju precej manj popolno (od 69 do 81% vrednosti pri različnih spremenljivkah). V obdobju 2002-2010 so bile v letih z višjimi stopnjami testiranja na klamidijske okužbe tudi prijavne stopnje klamidijskih okužb višje.*

***Zaključki**. Podatki o prijavni incidenčni stopnji klamidijskih okužb močno podcenjujejo incidenčno stopnjo laboratorijsko potrjenih primerov. To prispeva k nizki občutljivosti epidemiološkega spremljanja spolno prenesene klamidijske okužbe, ki pa je odvisna tudi od obsega testiranja. Obvezno prijavljanje prepoznanih primerov iz laboratorijev z manjšim naborom spremenljivk (šifra Soundex, datum rojstva, spol, regija bivanja, datum diagnoze, specialnost zdravnika, ki je naročil preiskavo) bi vsebovalo vse potrebne informacije za na dokazih temelječe javnozdravstveno odločanje, poenostavilo bi sistem epidemiološkega spremljanja in povečalo njegovo občutljivost (prijavljeni bi bili vsi laboratorijsko potrjeni primeri) ter obenem zmanjšalo delovno obremenitev zdravnikov. Obenem bi moralo laboratorijsko epidemiološko spremljanje dati tudi podatke o številu opravljenih testiranj, kar bi omogočilo oceniti stopnje testiranja in stopnje pozitivnosti (skupaj in po starosti in spolu pacientov in tudi po specialnosti zdravnikov, naročnikov).*

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1 INTRODUCTION

Sexually transmitted infection (STI) with bacteria *Chlamydia trachomatis* (chlamydia infection) is the most frequently reported bacterial STI in Slovenia and in Europe (1, 2). Prevention and control of chlamydia infection is important mainly because untreated infection may result in pelvic inflammatory disease, subfertility and poor reproductive outcomes in women (3). Opportunistic screening of young sexually active females has been recommended in several countries (4). Good quality surveillance data is necessary for evidence-based public health decisions on prevention and control (5, 6).

During 2004-2013, reported incidences of chlamydia infection in Slovenia varied from 6 to 12/100,000 population, which was rather low in comparison to most other European Union/European Economic Area (EU/EEA) countries (1, 2). Slovenian reported incidence rates of chlamydia infection are believed to substantially underestimate the true incidence (7). It is well known that differences in reported incidence rates between countries to a great extent reflect the differences in testing rates (8, 9). In addition, there may be underreporting of diagnosed cases.

Our objectives were to estimate the underreporting of chlamydial infection cases with laboratory confirmation in one of Slovenian laboratories, in particular at the Institute of Microbiology and Immunology (IMI), Medical Faculty, University of Ljubljana, to the National Institute of Public Health (NIPH) during the period 2007-2010, and to assess the completeness of reporting for different data items during the same period, with the aim to consider whether a revision of the national chlamydia surveillance system is needed.

2 METHODS

The Slovenian chlamydia surveillance system is based on mandatory reporting of all laboratory confirmed cases by physicians according to the Contagious Diseases Act (10), Health Care Databases Act (11), and communicable diseases reporting regulation (12). The Centres for Disease Control and Prevention (CDC) case definition that had been used since 2000 was replaced in 2008 by the European surveillance case definition (13-16). A common reporting form is used for the notification of all STI cases (15). The reported data items include: date of birth, gender, municipality of residence, citizenship, nationality, ethnicity, country of birth, occupation, marital status, diagnosis, date of diagnosis, results and dates of laboratory examinations, sexual behaviour, sexual orientation, countries and time spent living abroad, type and duration of medical therapy or prophylaxis, data on counselling and referrals, identity of the notifying physician and date of report. Data are collected without information about the identity of individuals (15). SOUNDEX code of the surname together with the date of birth is used as unique identifier to eliminate duplicates (15). Until the end of 2013, diagnosed cases data were reported to Regional Institutes of Public Health (RIPH) that archived paper notification forms, entered the data according to the instructions of the NIPH, and sent quarterly electronic databases to the NIPH four times per year, where the data were analysed, interpreted, and the results were published in annual reports (1). To complement information on reported chlamydia cases, the NIPH annually collated information on overall chlamydia diagnostic testing rates and positivity rates from all microbiology laboratories (10-12, 15, 17, 18). Since 2009, the data have been also reported to ECDC (European Centre for Disease Prevention and Control) according to Decision 2119/98/EC of the European Commission (19), so that ECDC can publish epidemiological reports with the data from European countries (2).

To estimate the underreporting of all chlamydia infection cases (of which a great majority, more than 90%, were confirmed by real-time PCR (COBAS® TaqMan® 454 CT Test, v2.0, Roche, Germany)) at the IMI to the NIPH during 2007-2010, we linked the dataset containing the information about cases diagnosed at the IMI to the national chlamydia surveillance data at the NIPH. SOUNDEX code of the surname together with the date of birth was used as unique identifier. In addition to the overall estimate of underreporting, we also estimated underreporting according to different specialisations of reporting physicians. We also estimated the completeness of reporting for different data items, and triangulated chlamydia reported rates for the period 2002-2010, with information about overall chlamydia testing rates obtained from microbiology laboratories with annual postal surveys.

3 RESULTS

Of the total of 576 chlamydia cases with laboratory confirmation at the IMI during 2007-2010, only 201 cases (34.9%) were reported to the NIPH. There was a great variation in underreporting pertaining to different specialties of reporting physicians (Figure 1). Dermatovenerologists reported 49.6% of the diagnosed cases and gynaecologist 9.9% of the diagnosed cases. Other specialists did not report diagnosed cases at all.

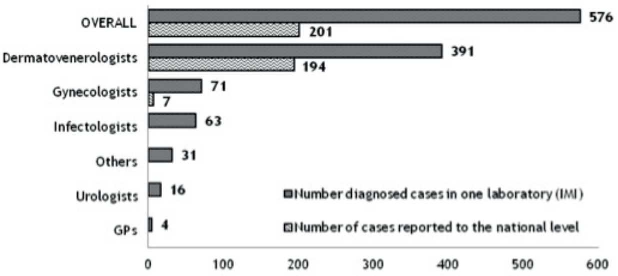

Figure 1. The number of reported chlamydia cases to the national surveillance system of all laboratory confirmed cases at the Institute of Microbiology and Immunology, overall and by physician speciality, Ljubljana, 2007-2010.

During 2007-2010, a total of 633 chlamydia infection cases in Slovenia were notified to the NIPH, with an average of 164 cases per year. Table 1 shows the proportions of notified chlamydia cases to the NIPH with missing information for individual variables for this period.

The data were fairly complete with respect to demographic variables, while non-response pertaining to sexual behaviour variables was rather high.

Figure 2 shows sexually transmitted chlamydia infection reported and testing rates for Slovenia in the health region of Nova Gorica for the period from 2002 to 2010.

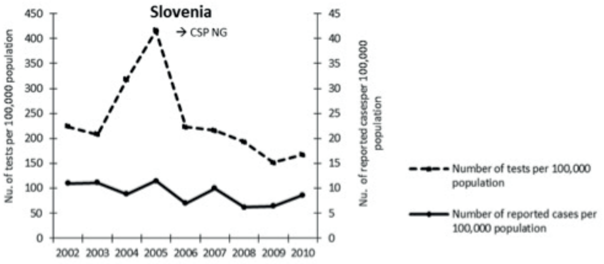

Figure 2. Chlamydia reported rates and testing rates, Slovenia, 2002-2010.

The peaks in national testing rates and reported incidence rates in 2005 reflected the implementation of Chlamydia screening project in the region of Nova Gorica (CSP NG), a pilot study of chlamydia screening in women from 18 to 30 years old, in which all women examined at 10 primary health gynaecological practices in the region of Nova Gorica from April to September 2005 were offered chlamydia testing (20, 21).

Table 1. The proportion (%) of the 633 notified chlamydia cases to the NIPH with missing information for individual variables, Slovenia, 2007-2010.

	2007-2010 (%)
SOUNDEX	0.5
Date of birth	0.0
Gender	0.2
Region	0.6
Citizenship	1.1
Country of birth	2.0
Profession/work	12.9
Marital status	19.2
Previous STI	9.7
The number of male sexual partners in the last three months	25.8
The number of female sexual partners in the last three months	18.6
The number of foreign male sexual partners in the last three months	29.7
The number of foreign female sexual partners in the last three months	28.7
The number of male sexual partners to whom the patient paid for sex in the last three months	31.0
The number of female sexual partners to whom the patient paid for sex in the last three months	30.6
Date of diagnosis	0.0
Date of notification	0.0
Speciality of the treating physician	0.3
Place of notification	0.0

Shaded data for these variables are available in medical microbiology laboratories.

4 DISCUSSION

Our results show that sexually transmitted chlamydia infection surveillance data in Slovenia substantially underestimate the diagnosed chlamydia infection cases, which contributes to the low sensitivity of chlamydia infection surveillance system. We have also shown that chlamydia reported rates depend on testing rates. Since Slovenian testing rates are rather low in comparison to other European countries (2), and thus substantial proportion of cases are not diagnosed, and since, in addition, physicians do not always report diagnosed cases after having received laboratory confirmation, the sensitivity of our surveillance system is very low.

Given the often asymptomatic nature of chlamydia infection, especially in women, all over Europe, the reported incidence rates are highly affected by testing policies and practices in individual countries (2). An important limitation to the interpretation of the epidemiological situation in Slovenia, as well as in the EU/EEA, is that many infections are either not diagnosed or, if diagnosed, not reported (1, 2). The overall increase of cases seen across the EU/EEA in the past decade was most likely due to a combination of effects: improved diagnostics tools, increased case detection, improved surveillance systems and the introduction of chlamydia screening programmes in a number of countries (1, 4, 8, 9). Although not many countries have implemented screening programmes, routine chlamydia testing in young sexually active females is on-going in clinical services in many countries (2, 8, 9). This could account for the high rates being reported in the west and north of EU/EEA. On the contrary, the decreasing or low rates in Eastern and Central EU/EEA may reflect changes in healthcare systems (from public to private sector) and reporting routines, so that the number of infections that remain undiagnosed and underreported may have increased substantially (2).

In the ECDC chlamydia reports data, the completeness of the variables ‘age’ and ‘gender’ was above 95%. The completeness of the variable ‘transmission category’ increased over time, but it is still missing for 85% of the cases due to countries with the highest case reports (2). In Slovenia, the data of demographic variables that are important for public health decisions (gender, age (calculated from date of birth and date of diagnosis), region, speciality of the treating physician) are complete or almost complete (>99%). These data, together with the data about the number of people tested according to gender, age, region, and speciality of the treating physician, would enable us to understand whether chlamydia testing is targeted to population groups at increased risk for chlamydial infection (e. g. men and women less than 30 years old) and whether testing is implemented through appropriate health care services (e. g. gynaecologists). In addition, it would be also interesting to look at the differences in positivity rates. In contrast to some other, much less common STIs, such as syphilis and gonorrhoea, that disproportionally affect population groups with increased risk on average, such as men who have sex with men, information about sexual behaviour (e.g. homosexual sex) will not have implications for targeting public health interventions aiming to prevent and control chlamydia infection.

The major limitation of our study was that the underreporting of diagnosed chlamydia cases was assessed by only linking the diagnosed cases in one laboratory (the IMI) to the national chlamydia surveillance system dataset. Thus, the estimated overall underreporting of laboratory confirmed cases, as well as differences in underreporting between different specialisations of reporting physicians, reflect mainly the differences in Ljubljana health region.

5 CONCLUSIONS

The Slovenian chlamydia surveillance system should be improved by the introduction of mandatory reporting of laboratory confirmed cases with less variables (including coded surname and date of birth (or some other unique identifier), gender, date of diagnosis, reporting physician specialty - all routinely collected in microbiology laboratories), to the NIPH by laboratories, instead of by physicians. Information on rather numerous variables currently reported by physicians, e.g. sexual behavioural data, is both incomplete and not essential for public health decisions about prevention and control of chlamydia infections, and it could be omitted. Laboratory based surveillance of chlamydia infections should also enable the monitoring of the types of tests used, testing rates in various age groups of women and men, and in groups of patients using different healthcare services, as well as according to the specialisation of physicians ordering laboratory tests. Such a revision would simplify the chlamydia surveillance system, eliminate the underreporting of laboratory confirmed cases, and reduce the workload of physicians, while still provide the necessary information for evidence-based public health policies.

Finally, as the rate of testing for Chlamydia infection in Slovenia is very low, many infections remain unrecognized, and we are missing opportunities for early diagnosis, treatment and prevention of late sequelae primarily in women. Access to opportunistic testing for sexually transmitted chlamydia among young, sexually active women should be considered (4).

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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ETHICAL APPROVAL

All the data analysed in this study were collected at the National Institute of Public Health, without information about the identity of individuals diagnosed with chlamydial infection, according to the Contagious Diseases Act, Health Care Databases Act and Communicable Diseases Reporting Regulation. The study was conducted in accordance with the code of Ethics of the World Medical Association (Declaration of Helsinki).

REFERENCES

1. Klavs I, Kustec T (eds.). Spolno prenešene okužbe v Sloveniji: letno poročilo 2014. Ljubljana: National Institute of Public Health, 2015. Available September 11, 2015 from: http://www.nijz.si/epidemiolosko-spremljanje-nalezljivih-bolezni-letna-porocila.
2. European Centre for Disease Prevention and Control. Annual epidemiological report 2014: sexually transmitted infections, including HIV and blood-borne viruses. Available September 24, 2015 from: http://ecdc.europa.eu/en/publications/Publications/sexually-transmited-infections-HIV-AIDS-blood-borne-annual-epi-report-2014.pdf.
3. Holmes KK, Sparling PF, Stamm WE, Piot P, Wasserheit JN, Corey L, et al. Sexually transmitted diseases. New York: McGraw-Hill, 2008.
4. Grgič-Vitek M, Učakar V, Klavs I. Presejanje na spolno prenosljivo klamidijsko okužbo: pregled priporočil. Zdrav Var 2008; 47: 8-17.
5. World Health Organization. Global strategy for the prevention and control of sexually transmitted infections: 2006-2015. Geneva: World Health Organization, 2007.
6. Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems. MMWR. Recommendations and reports. 2001; 50(13). Available June 1, 2015 from: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm.
7. Klavs I, Rodrigues LC, Wellings K, Keše D, Hayes R. Prevalence of genital Chlamydia trachomatis infection in the general population of Slovenia: serious gaps in control. Sex Transm Infect 2004; 80: 121-3.
8. European Centre for Disease Prevention and Control. Chlamydia control in Europe: a survey of member states, 2012. Available September 8, 2015 from: http://ecdc.europa.eu/en/publications/Publications/chlamydia-control-survey-europe-2012.pdf.
9. European Centre for Disease Prevention and Control Guidance. Chlamydia control in Europe: literature review, 2014. Available September 9, 2015 from: http://ecdc.europa.eu/en/publications/Publications/chlamydia-control-europe.pdf .
10. Contagious diseases act. Ljubljana: Official Gazette of the Republic of Slovenia 2006; 33. Available June 1, 2015 from: http://www.uradni-list.si/1/objava.jsp?urlid=200633&stevilka=1348.
11. Health care databases act. Official Gazette of the Republic of Slovenia 2000; 65. Available June 1, 2015 from: http://zakonodaja.gov.si/rpsi/r09/predpis_ZAKO1419.html.
12. Communicable diseases reporting regulation. Official Gazette of the Republic of Slovenia 1999; 16. Available June 1, 2015 from: http://zakonodaja.gov.si/rpsi/r05/predpis_PRAV765.html.
13. Guidelines for STI Surveillance. UNAIDS/WHO Working Group on Global HIV/AIDS/STI Surveillance, 1999.
14. Centre for Disease Control and Prevention. CDC prevention guidelines database (archive). Available September 11 2015 from: http://wonder.cdc.gov/wonder/prevguid/prevguid.html
15. Grgič-Vitek M, Klavs I. Navodila za prijavo spolno prenosljivih okužb. Zdrav Var 2000; 39 (Suppl): 1-39.
16. Commission Decision of 28/IV/2008 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. Available June 1, 2015 from: http://ecdc.europa.eu/en/activities/surveillance/sti/pages/case%20definition.aspx.
17. Klavs I, Hočevar-Grom A, Sočan M, Grgič-Vitek M, Pahor L, Kraigher A. Communicable disease surveillance, prevention and control in Slovenia. EuroSurveill 2004; 8: 2488.
18. Kraigher A, Sočan M, Klavs I, Frelih T, Grilc E, Grgič Vitek M, et al. (eds.). Epidemiološko spremljanje nalezljivih bolezni v Sloveniji v letu 2013. Ljubljana: National Institute of Public Health, 2014. Available June 1, 2015 from: http://www.nijz.si/sites/www.nijz.si/files/publikacije-datoteke/epidemilosko_spremljanje_nalezljivih_bolezni_2013.pdf.
19. European Centre for Disease Prevention and Control. Decision No 2119/98/EC of the European Parliament and of the Council. Available September 11, 2015 from: http://ecdc.europa.eu/en/aboutus/key_documents/Pages/key_documents.aspx.
20. Frelih T. Project »Prevention of Reproductive Health in Young Women«. Program Phare CBS Slovenija/Italija 2002. Nova Gorica: IPH Nova Gorica, 2005.
21. Frelih T. Chlamydia screening project starts in Nova Gorica, Slovenia. EuroSurveill 2005; 10: 4-6.

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QUALITY OF CARE FOR PATIENTS WITH DIABETES MELLITUS TYPE 2 IN ‘MODEL PRACTICES’ IN SLOVENIA – FIRST RESULTS

KAKOVOST OSKRBE BOLNIKOV S SLADKORNO BOLEZNIJO TIPA 2 V REFERENČNIH AMBULANTAH - PRVI REZULTATI

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ABSTRACT

Keywords:
type 2 diabetes, model practice, quality of care, quality indicators

Background. A new organisation at the primary level, called model practices, introduces a 0.5 full-time equivalent nurse practitioner as a regular member of the team. Nurse practitioners are in charge of registers of chronic patients, and implement an active approach into medical care. Selected quality indicators define the quality of management. The majority of studies confirm the effectiveness of the extended team in the quality of care, which is similar or improved when compared to care performed by the physician alone. The aim of the study is to compare the quality of management of patients with diabetes mellitus type 2 before and after the introduction of model practices.

Methods. A cohort retrospective study was based on medical records from three practices. Process quality indicators, such as regularity of HbA1c measurement, blood pressure measurement, foot exam, referral to eye exam, performance of yearly laboratory tests and HbA1c level before and after the introduction of model practices were compared.

Results. The final sample consisted of 132 patients, whose diabetes care was exclusively performed at the primary care level. The process of care has significantly improved after the delivery of model practices. The most outstanding is the increase of foot exam and HbA1c testing. We could not prove better glycaemic control ($p>0.1$). Nevertheless, the proposed benchmark for the suggested quality process and outcome indicators were mostly exceeded in this cohort.

Conclusion. The introduction of a nurse into the team improves the process quality of care. Benchmarks for quality indicators are obtainable. Better outcomes of care need further confirmation.

IZVLEČEK

Ključne besede:
sladkorna bolezen tipa 2, referenčne ambulante, kakovost oskrbe, kazalniki kakovosti

Izhodišče*. Referenčne ambulante predstavljajo novo organizacijsko obliko dela na primarni ravni. V njihovem timu sodeluje diplomirana medicinska sestra s podiplomskimi znanji, ki skrbi za register kroničnih bolnikov in bolnike aktivno vabi na redne kontrole. Samostojno opravlja nekatere postopke, kot je npr. pregled nog, in po protokolu dela sodeluje pri drugih postopkih oskrbe. Kakovost obravnave bolnikov s sladkorno boleznijo tipa 2 (SB2) je opredeljena z izbranimi procesnimi in izidnimi kazalniki kakovosti. Standardi kakovosti so postavljeni na 80% za procesne in na 50% za izidne kazalnike kakovosti. Večina raziskav potrjuje, da razširitev tima in prevzem nekaterih nalog v oskrbi sladkornih bolnikov s strani diplomirane medicinske sestre ne poslabša kakovosti oskrbe ali pa jo izboljša, če jo primerjamo z oskrbo, ki jo vodi le zdravnik družinske medicine. V raziskavi smo želeli ugotoviti kakovost vodenja sladkornih bolnikov pred uvedbo referenčnih ambulant in po njej.*

Metode*. Izvedena je bila kohortna retrospektivna raziskava. Podatki so bili zbrani iz zdravstvenih kartotek bolnikov s SB2 iz treh ambulant družinske medicine. Primerjani so bili kazalniki kakovosti, med njimi meritve HbA1c, izveden je bil letni laboratorij (z določitvijo lipidov v plazmi, ocenjene glomerularne filtracije oz. kreatinina in urinske analize), opravljene so bile meritve krvnega tlaka, pregled nog in napotitev na pregled očesnega ozadja; ter ugotovljena je bila vrednost HbA1c pred uvedbo referenčnih ambulant in po njej.*

Rezultati*. V vzorec je bilo vključenih 132 bolnikov, pri katerih je oskrba SB2 potekala izključno na primarni ravni. Proces oskrbe se je značilno izboljšal po uvedbi referenčnih ambulant. Najbolj sta v izboljšanju kakovosti izstopala rednost pregleda nog in rednost testiranja HbA1c, čeprav pa nista dosegla priporočenega standarda kakovosti 80%. Kljub doseženemu standardu kakovosti izidnega kazalnika 50% v tej kohorti ni bilo dokazano statistično pomembno izboljšanje glikemije (*$p>0,1$*).*

Zaključek*. Pred uvedbo referenčnih ambulant je bilo vodenje sladkornih bolnikov daleč od priporočenega. Vključitev diplomirane medicinske sestre v tim izboljša postopke kakovostne oskrbe. Priporočeni standardi za kazalnike kakovosti so dosegljivi. Boljšo urejenost glikemije in druge kakovostne izide oskrbe bolnikov bo treba še dokazati.*

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1 INTRODUCTION

Ageing of the population, increasing prevalence of diabetes mellitus 2 (DM2) and costs of diabetes care stress the need for effective and quality care that should be at least partly managed at the primary level, because it is cost effective and more accessible than at the secondary level (1). Several studies found that the recommended clinical practice guidelines were not adequately followed in diabetes patients (2-4), although the process of care and intermediate outcomes have improved in the past decade (4). Thereafter, a range of interventions has been designed to improve the management and outcome of diabetes care. Several interventions targeted healthcare professionals. Many studies focused on the education of health care professionals, showing an improved provision of diabetes care, but conflicting results of patient outcomes; other studies researched the organisational aspects, the effect of a multidisciplinary team and nurses providing a part of diabetes care, and showed some improvements in patient outcomes (5). The inclusion of a nurse into the team and nurse-led care showed many beneficial results of diabetes management, but several issues remain unsolved, such as the scope of nurse interventions and the training needs of the nurses (6).

1.1 Development of Model Practices (MP)

Due to a very high workload, family physicians in Slovenia face difficulties in providing quality care for their chronic patients in several aspects, including education and support. Studies in other countries show that despite the clinical guidelines for the management of DM2, it too often fails to achieve the recommended results (7, 8).

Traditionally, Slovenian family practices work with a small team consisting of a physician and practice nurse who holds a bachelor's degree, but is not trained in the management of chronic patients. In 2011, a national project called »model practices« (MP) was introduced as a new concept of work in family medicine. Publicly and privately founded practices have gradually adopted this new organisational form: a 0.5 fulltime equivalent nurse practitioner was introduced into the team, and protocols (based on guidelines) for chronic care with a detailed description of the professional responsibilities of physicians, practice nurses and nurse practitioners were developed (9). Nurse practitioners created or completed previously existing registers of chronic patients (10). A register of patients with DM2, for example, enables an overview of patient morbidity, follow-up examinations, and an active approach to the care of these patients. They plan regular check-ups, educate, provide advice and increase skills of self-management in patients (11).

In traditional practices, there were several obstacles to quality diabetes care: the National Insurance Company did not fully cover regular laboratory testing according to the guidelines, and the education of patients was not available within the primary practice team. According to this, only a smaller part of diabetes patients, those with simple oral treatment and no complications, were not referred to the diabetologist. The quality of care for patients with DM2 managed at the primary level was not followed.

The quality of diabetes care in model practices is evaluated by the quality indicators based on diabetes guidelines (12). Accordingly, HbA1c, laboratory tests (serum glucose, creatinine, glomerular filtration rate, complete serum lipids with total cholesterol, HDL and LDL cholesterol and triglycerides, urine dip-stick analysis), measurement of blood pressure, foot exam and referral to the eye exam have to be performed at least once per year. The level of HbA1c is set below 7.0%. The benchmark for quality indicators is agreed upon by a project council and set at 80% for process indicators and at 50% for outcome indicators.

In this research, we compared the quality of care through quality indicators before and after the introduction of model practices. The objectives were to compare the proportion of patients with DM2 who achieved quality indicators before and after the introduction of model practices. Our assumption was that, after the introduction of model practices, the quality of care, according to chosen quality indicators, was better than in standard practices.

2 METHODS

This was a cohort retrospective analysis of the medical records of patients with DM2, whose management of DM2 was performed only in family practice. We compared the quality of care one year before and after the introduction of model practices. As the practices entered the new organisational form at different times, the total observational period was from 1 April 2010 to 31 March 2013.

2.1 Participants

The sample consisted of 132 adults with DM2 from the register of diabetes patients, who were diagnosed before 1 April 2010 in three model practices, established between April 2011 and March 2012 at one location in the Primary care centre in the city of Maribor. There were 10 family medicine practices at this location - four of them were eligible for inclusion, out of which we included three. On 1 Oct 2014, the three included practices had 6745 patients altogether on their patient lists. A total of 526 patients with DM2 were in the registers (7.7%). We excluded 88 patients who had been diagnosed after 1 April 2010, 21 patients who had changed their physician and 10 who had died. Altogether, 407 medical records were available. 275 patients, who regularly visited a diabetologist, were also excluded from the analysis.

2.2 Data Collection

We collected the data with the instrument that was developed for this study. It contained basic demographic data of the patients and quality indicators for the management of DM2. The following quality indicators were used to assess the quality of care: process indicators (yearly assessed HbA1c, laboratory tests according to guidelines: creatinine/glomerular filtration rate, serum lipids, urine dipstick test and serum glucose, measurement of blood pressure, referral for eye exam, foot exam) and one outcome indicator (HbA1c<7.0%). Foot exams consisted of palpation of foot pulses and sensibility testing. All process indicators were assessed as carried out in the case of patient management performed by a registered nurse or physician. We evaluated the defined quality of care within the whole team without differentiating procedures performed by nurses or by GPs. We observed care in the period of 1 year before and after the introduction of model practices. The quality of care was defined as good if the quality indicators were performed at least once in a 12-month period.

2.3 Statistical Analysis

We used the statistical package IBM SPSS Statistics version 20.0 for Windows (IBM Corp., Armonk, NY). Demographic data and quality indicators for diabetes care were presented by frequencies and percentages for categorical variables, or by mean values and standard deviations for continuous variables. The chi -square test was used to compare the frequencies of quality indicators, and t-test for dependent samples was used to compare HbA1c levels (both before and after the introduction of model practices). Statistical significance was set at p<0.05.

The study was approved by the Republic of Slovenia National Medical Ethics Committee, on 11 November 2014, under the number 70/11/14.

3 RESULTS

The final sample consisted of 132 patients with DM2, which represents an average of 2.1% of all patients on the patient list per practice. 54 were men (41%) and 78 women (59%). The mean age was 69.5 years (SD=12.0), range 39-86 years.

3.1 The Quality of Care for Patients with DM2

The quality of care was assessed by the achievement of benchmark for selected quality indicators, which were compared before and after the introduction of model practices. The % of performed actions in diabetes management is presented in Table 1.

Table 1. The share of patents with DM2 according to process quality indicators before and after the introduction of model practices.

Quality indicators	Before model practices No (%)	After model practices No (%)	$\chi 2$	P
Measured HbA1c	33 (25)	108 (82)	43.32	<0.01
Laboratory tests[1]	51 (39)	99 (75)	40.50	<0.01
Foot exam	9 (7)	90 (68)	75.00	<0.01
Eye exam	59 (45)	120 (91)	51.57	<0.01
Measured blood pressure	117 (89)	125 (95)	3.030	n.s.
Annual examination	59 (45)	119 (90)	49.73	<0.01

Legend: n.s. - non significant

[1] if all lab tests (except HbA1c) were performed at least once per year (creatinine, oGFR, serum lipids, urine dip-sticks, serum glucose)

3.2 Glycaemic Control in Patients with DM2

1.5 years before model practices, only 33 patients had their HbA1c levels measured at least once per year, but after the introduction of model practices, 109 patients had their HbA1c levels measured. Results in Table 2 were calculated for these 33 patients: 15 men (45%) and 19 women (54%) with the mean age of 70.5 years (SD=11.6). The 33 patient sample did not differ statistically from the total sample in gender and age.

Table 2. HbA1c levels in DM2 patients before and after the introduction of model practices (N=33).

HbA1c (%) before model practices		HbA1c (%) after model practices		t (df)	P
M	SD	M	SD		
7.60	1.32	7.33	1.21	1.08 (33)	n.s.

Legend: M – mean, SD – standard deviation, t – t test, df – degree of freedom, p - significance level of the test

After the introduction of model practices, 108 patients had a determined HbA1c at least once per year, out of which 72 (66.7%) had its value in the target area (below 7.0%).

4 DISCUSSION

Before introducing model practices (MP), provided laboratory resources did not include regular laboratory tests, necessary for diabetes care, and the lack of a team approach hindered good diabetes care in Slovenian family practices. Education about diabetes was performed by a physician or other persons as offered by locally-specific education options (for example, registered nurses in the preventive centre at the primary level), because no registered nurse with specialist knowledge was available within the team of the primary care practice. Our results showed a low rate of HbA1c control: the lipid status was checked only partly and the foot exam was almost never performed. The referral for an eye exam was not systematic. Despite regular blood glucose control, we could not talk about a good follow-up of the glycaemic status and of patients with DM2 in general.

After the introduction of model practices, nurse practitioners have actively been inviting patients for regular check-ups, which are performed both by them and the family doctor. Principles of structured care have been developed for model practices. The analysis of data shows a significantly increased rate of HbA1c testing, biochemical lab tests, and foot and eye exams. The rates of most process quality indicators exceed the 80% benchmark, with the exemption of foot exams and annual laboratory controls of lipids and creatinine levels. This is probably due to the fact that nurses follow the protocol more consistently than family doctors (13). The biggest change was observed in the number of foot exams. Although not reaching the benchmark, they had not been implemented at all by family physicians.

The improvement of process indicators was shown also in other studies, and it is probably attributable to active contacts with patients performed by nurses (5), and to detailed protocols, which are also available to the nurses in model practices. Via these protocols, they can assume some of the physician's responsibilities (5). What we could not prove in this study was better metabolic control, although the trend of lower HbA1c was noticed in model practices. The small sample (only 33 patients for comparison) is a result of a small number of patients who had HbA1c previously checked in regular practices. This differs from the study that evaluated cardiovascular risk factors and showed improvement in the level of blood pressure, cholesterol and physical activity in model practices, compared to regular practices (8).

Similar results of diabetes management have been found in other studies.

Several countries have introduced specialised nurses into the primary care team (14-16). The quality of care was similar if the patient was managed by a nurse or family doctor (15, 17-18), or glycaemic control and some process indicators (such as foot exam and eye exam referral) were better (16, 18-19), and therefore even less cases of hospitalisation and acute deterioration occurred (19). Our study showed better results for process indicators of diabetes care, when compared to the Suija study in several European countries, where a proportion of patients with a yearly measured lipid profile ranged from 23% to 69%, and a proportion of patients screened for HbA1c ranged from 57% to 91% of patients (20). Our study showed comparable or slightly worse results to another international study that found a very high proportion of achieved process indicators (more than 80%) with the exemption of foot exam, which was yearly performed only in 73% of patients with DM2 (foot pulses) and 67% of patients with DM2 (foot sensation checked).

The defined benchmark level for outcome indicators in model practices is set at 50% at the moment, which does not seem a very ambitious goal, but it is a realistic one, according to the presented data. Good glycaemic control in our study was achieved in more than 50% of the cases. Altogether, 66.7% of patients had HbA1c <7.0%. The proportion of patients with adequate metabolic control in the Suija study ranged from 50% to 68% (20). HbA1c<7.0% was achieved in 54% of patients with DM2 in the Guidance study, but we have to be careful when comparing the results with our study, because the samples might not be comparable in important characteristics (21). The Canadian primary care study of diabetes care showed that 49% of patients were not targeted for glycaemic control (22). Achieved glycaemic control in general is not very high, and it also points to the importance of patient self-management, which interferes with diabetes management on the practice level (23). Another option to improve the immediate outcome of diabetes care is extended competencies of registered nurses, who can, in some countries, not only advise and check, but also help with patient medication, including a timely start of insulin administration (24).

This is a local study that included 3 model practices with all eligible patients according to the inclusion criteria. Due to the small sample, we cannot generalise the results to all Slovenian practices. As such, it has an important limitation and we would need a larger random sample for possible generalisation. Presented are the first results in the project that is still ongoing and gradually including more and more practices (as of today, 52% of all Slovenian practices are working by the new model).

5 CONCLUSION

Model practices allow the achievement of modern standards of diabetes care with the inclusion of a nurse practitioner in the team. We achieved the aim of the study and showed that the process of care, measured by chosen quality indicators, has increased in the included model practices. With the inclusion of an adequate number of the practices in the project, the quality of care can be evaluated across the country by random sampling of the practices. In the future, we have to re-evaluate the benchmark for outcome indicators, especially for glycaemic control.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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None.

ETHICAL APPROVAL

The study was approved by the Republic of Slovenia National Medical Ethics Committee, on 11 November 2014, under the number 70/11/14.

REFERENCES

1. Wilf-Miron R, Bolotin A, Gordon N, Porath A, Peled R. The association between improved quality diabetes indicators, health outcomes and costs: towards constructing a “business case” for quality of diabetes care--a time series study. BMC Endocr Disord 2014 ;14: 92.
2. Sullivan FM1, Stearn R, MacCuish AC. The role of general practitioners in diabetic eye care in Lanarkshire. Diabet Med 1994; 11: 583-5.
3. Beckles GL, Engelgau MM, Narayan KM, Herman WH, Aubert RE, Williamson DF. Population based assessment of the level of care among adults with diabetes in the U.S. Diabetes Care 1998; 21: 1432-8.
4. Saaddine JB, Cadwell B, Gregg EW, Engelgau MM, Vinicor F, Imperatore G, et al. Improvements in diabetes processes of care and intermediate outcomes: United States, 1988-2002. Ann Intern Med 2006; 144: 465-74.
5. Renders CM, Valk GD, Griffin SJ, Wagner EH, Eijk Van JT, Assendelft WJ. Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review. Diabetes Care 2001; 24: 1821-33.
6. Carey N, Courtenay M. A review of the activity and effects of nurse-led care in diabetes. J Clin Nurs 2007; 16: 296-304.
7. Kirk JK, Huber KR, Clinch CR. Attainment of goals from national guidelines among persons with type 2 diabetes: a cohort study in an academic family medicine setting. N C Med J 2005; 66: 415-9.
8. Harris SB, Stewart M, Brown JB, Wetmore S, Faulds C, Webster-Bogaert S, et al. Type 2 diabetes in family practice: room for improvement. Can Fam Physician 2003; 49: 778-85.
9. Poplas-Susič T, Švab I, Kersnik J. The project of model practices in family medicine in Slovenia. Zdrav Vestn 2013; 82: 635-47.
10. Poplas-Susič T, Švab I, Klančar D, Petek D, Vodopivec Jamšek V, Bulc M, et al. Screening and registering patients with asthma and COPD in Slovenian primary care : first results. Zdrav Var 2015; 54: 161-67.
11. Klemenc-Ketis Z, Kravos A, Poplas-Susič T, Svab I, Kersnik J. New tool for patient evaluation of nurse practitioner in primary care settings. J Clin Nurs 2014; 23: 1323-31.
12. Slovenian guidelines for clinical management of type2 diabetes in adult patients, 2011. Avilable July 18, 2015 from: http://www.endodiab.si/priporocila/sb/
13. Furthauer J, Flamm M, Sonnichsen A. Patient and physician related factors of adherence to evidence based guidelines in diabetes mellitus type 2, cardiovascular disease and prevention: a cross sectional study. BMC Fam Pract 2013; 14: 47.
14. Klemenc Ketis Z, Terbovc A, Gomiscek B, Kersnik J. Role of nurse practitioners in reducing cardiovascular risk factors: a retrospective cohort study. J Clin Nurs 2015; 24: 3077-83.
15. Houweling ST, Kleefstra N, van Hateren KJ, Groenier KH, Meyboom-de Jong B, Bilo HJ. Can diabetes management be safely transferred to practice nurses in a primary care setting?: a randomised controlled trial. J Clin Nurs 2011; 20: 1264-72.
16. Lawson B, Dicks D, Macdonald L, Burge F. Using quality indicators to evaluate the effect of implementing an enhanced collaborative care model among a community, primary healthcare practice population. Nurs Leadersh 2012; 25: 28-41.
17. Lenz ER, Mundinger MO, Hopkins SC, Lin SX, Smolowitz JL. Diabetes care processes and outcomes in patients treated by nurse practitioners or physicians. Diabetes Educ 2012; 28: 590-8.
18. Health Quality Ontario. Specialized nursing practice for chronic disease management in the primary care setting: an evidence-based analysis. Ont health Technol Assess Ser 2013; 13: 1-66.
19. Haji Ali Afzali H, Gray J, Beilby J, Holton C, Banham D, Karnon J. A risk-adjusted economic evaluation of alternative models of involvement of practice nurses in management of type 2 diabetes. Diabetes Med 2013; 30: 855-63.

20. Suija K, Kivisto K, Sarria-Santamera A, Kokko S, Liseckiene I, Bredehorst M, et al.Challenges of audit of care on clinical quality indicators for hypertension and type 2 diabetes across four European countries. Fam Pract 2015; 32: 69-74.
21. Stone MA, Charpentier G, Doggen K, Kuss O, Lindblad U, Kellner C, et al. Quality of care of people with type 2 diabetes in eight European countries: findings from the Guideline Adherence to Enhance Care (GUIDANCE) study. Diabetes Care 2013; 36: 2628-38.
22. Harris SB, Ekoé JM, Zdanowicz Y, Webster-Bogaert S. Glycemic control and morbidity in the Canadian primary care setting (results of the diabetes in Canada evaluation study). Diabetes Res Clin Pract 2005; 70: 90-7.
23. Kirk JK, Huber KR, Clinch CR. Attainment of goals from national guidelines among persons with type 2 diabetes: a cohort study in an academic family medicine setting. N C Med J 2005; 66: 415-9.
24. Furler JS, Blackberry ID, Walker C, Manski-Nankervis JA, Anderson J, O'Neal D, et al. Stepping up: a nurse-led model of care for insulin initiation for people with type 2 diabetes. Fam Pract 2014; 31: 349-56.

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KNOWLEDGE OF HEALTH PRINCIPLES AMONG PROFESSIONALS IN SLOVENIAN KINDERGARTENS

POZNAVANJE OSNOVNIH ZDRAVSTVENIH UKREPOV MED ZAPOSLENIMI V SLOVENSKIH VRTCIH

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ABSTRACT

Keywords:
kindergarten teachers, kindergarten teacher assistants, health principles, knowledge

Objectives. Preschool children have significant health issues. From the relevant legislation and regulations, it can be seen that kindergarten teachers (KTs) and kindergarten teacher assistants (KTAs) are expected to be familiarwith the basic hygienic measures and steps for preventing injuries and illnesses, to recognize infectious diseases, and to know how to give the first aid. To gain these skills, a continuous life-long learning is necessary, because the characteristics of diseases are changing. Study design: original research.

Methods. 45 kindergartens in Slovenia were randomly selected and a questionnaire with 17 questions on health themes was sent. An analysis was performed via SPSS 17.0, using descriptive methods and nonparametric χ^2 tests.

Results. There were 774 participants, of whom 56% were KTs and 44% KTAs. The share of KTs and KTAs who consider their knowledge of health principles to be very good or excellent is 67%. Their estimation of first aid knowledge is lower. They are also well aware of the importance of health knowledge in their work; a total of 87% strongly agree with this. The results also show that they are familiar with hygiene principles. The χ^2 test showed there are certain statistically characteristic connections between the age of teachers and their assistants, occupation and work experiences.

Conclusions. Because children are a particularly vulnerable group, teachers can encounter injuries and sudden illnesses at their work. Supplementary education is necessary among skilled workers in educational institutions, including kindergartens.

IZVLEČEK

Ključne besede:
vzgojiteljice, pomočnice vzgojiteljic, zdravstveni ukrepi, znanje

***Uvod**. Predšolski otroci so ranljiva skupina s specifičnimi zdravstvenimi težavami. Od vzgojiteljic in njihovih pomočnic se zato pričakuje, da imajo znanja o osnovnih higienskih načelih in ukrepih za preprečevanje nastanka bolezni ali poškodb, da prepoznajo nalezljive bolezni in nudijo prvo pomoč v primeru nastanka poškodbe ali nenadnega obolenja. Slednje je tudi zakonsko opredeljeno. Značilnosti bolezni otrok, vrste kroničnih bolezni in smernice ukrepanja v primeru nastanka poškodb ali nenadnih obolenj se spreminjajo. Znanja, ki jih vzgojiteljice in njihove pomočnice usvojijo med šolskim izobraževanjem, naj bi bila le temelj vseživljenjskemu učenju.*

***Metode**. Petinštiridesetim naključno izbranim vrtcem v Sloveniji je bil poslan anketni vprašalnik s 17 vprašanji. S pomočjo programa SPSS 17.0. so bili analizirani pridobljeni podatki, uporabljene so bile opisne metode in neparametrični test* χ^2.

***Rezultati**. V raziskavi je sodelovalo 774 oseb, od tega 56% vzgojiteljic in 44% pomočnic vzgojiteljic. Delež tistih, ki so samoocenile svoje znanje o osnovnih higienskih načelih kot zelo dobro ali odlično, je 67-odstoten, 30% pa je svoje znanje samoocenilo kot dobro. Samoocena znanja prve pomoči je nižja. Največ znanja (skoraj polovico) so anketirani usvojili med izobraževanjem na srednji šoli ali fakulteti. Da je tudi zdravstveno znanje pri delu z otroki zelo pomembno, se močno strinja 87% anketiranih in strinja 13%. Rezultati kažejo, da vzgojiteljice in pomočnice vzgojiteljic v glavnem poznajo pravilne ukrepe v primeru bolezni in akutnih poškodb, pri tem pa obstaja nekaj izjem. V zvezi z boleznimi in akutnimi poškodbami je bilo med anketiranimi ugotovljeno dobro znanje o primernih ukrepih, a ne pri vseh boleznih in stanjih. Anketirane vzgojiteljice in pomočnice vzgojiteljic so dobro seznanjene z osnovnimi higienskimi ukrepi za preprečevanje nastanka bolezni. Rezultati testa* χ^2 *kažejo nekatere statistično značilne povezave pri starosti anketirancev, poklicu (vzgojiteljica ali pomočnica) in delovnih izkušnjah.*

***Razprava**. V vrtcu lahko hitro pride do bolezni ali poškodb, saj so otroci ranljivejša skupina, zato morajo vzgojiteljice in pomočnice vzgojiteljic znati pravilno ukrepati. Poudarjen je pomen dopolnilnega usposabljanja med delavci v vzgojno-izobraževalnih ustanovah, kamor sodijo tudi vrtci.*

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1 INTRODUCTION

In 2011, there were approximately 125,000 preschool children in Slovenia, representing about 6% of the population. The country has one of the highest levels of employed mothers in Europe; consequently, 75% of children attend kindergartens. The level of inclusion of children in kindergartens increases with children's age. Among the youngest children, 40% attend kindergarten; among those aged from four to five years, the percentage is over 90% (1).

Preschool children have significant health problems that are connected with growth and development specialities, and their way of life, which have an influence on their physical, mental, spiritual and social health(2). They are particularly at risk for harming themselves through their activities while playing games, learning and acquiring new experiences. As in other European countries, the most frequent causes of death among children in Slovenia are injuries and poisonings (3, 4). They are also more prone to some diseases, their bodies are more vulnerable to harmful environmental effects, and their immune systems have yet not fully developed(5). Admission to kindergarten can increase vulnerability, because children are exposed to new environmental influences. The strategy of the government of the Republic of Slovenia for children's health, related to the environment for the period 2012-2020, stresses the importance of protecting the health of children against harmful environmental factors, and sees itan integral part of public health in environmental policy. The policy also set out the priority areas to further reduce the environmental burden in children to improve their health and well-being. At the macro level, this policy highlights the importance of health protection in the kindergarten environment (5).

The United Nation's Declaration of the Rights of the Child (6) states that every child has the right to live and grow up in healthy conditions. The best interests of a child should guide everybody responsible for their education and upbringing, especially their parents. Considering the high percentage of children included in kindergartens and the fact that children in developed parts of the world increasingly spend time in day care institutions, there is an immense responsibility placed on kindergarten teachers (KTs) and kindergarten teacher assistants (KTAs). The problems of injury and illness are always present. The authors of different studies have emphasized these problems (7-9).

The treatment in case of injury or illness in kindergartens and the responsibilities of KTs in Slovenia are defined in the Law on Kindergartens (10), as well as in The Book of Rules and Conditions for Performing Preschool Education (11). Giving first aid in case of injury or illness in a kindergarten is also defined by The Law on Safety in Traffic (12), the Book of Rules about Organization, Material and Equipment for First Aid at Workplace (13) and others. Based on the Law on Kindergartens, the principal of every kindergarten issues the Book of Rules on the Safety of Children, in which procedures, arrangements, treatments, and activities pertaining to children's safety, health, life and well-being in the kindergarten are defined. Each kindergarten must have its own Kindergarten Plan for Acting in Emergency Situations and Unexpected Illness Symptoms. In this plan, individual responsibilities and duties for acting in an emergency as well as providing conditions for appropriate actions are described. All employees have to confirm (by signature) that they are acquainted with the rules of acting in accordance with the plan (14).

From the abovementioned laws and regulations, it can be seen that knowledge of basic hygienic measures and steps for preventing injuries and illnesses, as well as recognition of infectious diseases and knowledge of first aid are expected from KT and KTA. To gain such skills, continuous life-long learning is necessary, in addition to any formal training received when studying, because the characteristics of diseases, kinds of chronic diseases and guidelines for acting in case of injuries are changing. The purpose of this investigation was to determine the level of knowledge of KT and KTA of various themes regarding children's health. The research also determines their knowledge of health principles.

2 METHODS

Out of 289 kindergartens in Slovenia, there were 45 randomly selected and sent a questionnaire with 17 questions regarding health. This questionnaire was prepared for KT and KTA. Over the course of two weeks, about 80% of the kindergartens returned completed questionnaires (N=774), which included 426 (54.6%) KTs and 351 (45.4%) KTAs. The health themes are as follows: kindergarten teachers and their assistants' responsibilities related to health principles, celiac disease, diabetes, febrile seizures, hygiene principles, first aid principles and their opinions pertaining their own knowledge.

The demographic data collected included age, gender, years of experience working with children, and the occupation of a participant.

The survey was pretested in a group of 30 KTs and KTAs for accuracy and ease of administration, in order to identify problematic questions and alter them appropriately.

The analysis was performed in SPSS 17.0, using descriptive methods and nonparametric χ^2 tests. The level of statistical significance was determined as $p<0.05$.

3 RESULTS

The demographic data of 774 participants are presented in Table 1. Our sample included 54.6% of KTs and 45.4% KTAs. On average, KTs were older (42±10.2) than KTAs (35±9.2) and had more work experience (KT 19.9±11.8; KTA 9.3±9.2).

The share of KTs and KTAs who consider their knowledge of health principles to be very good or excellent is 67%; 30% deem it to be good (Table 2). Their estimation of first aid knowledge is worse: 45% consider it very good or excellent and 45% see it as good. Most of their knowledge (almost one half) was obtained in college or at their faculty. The data about the most recent participation in education on health principles show satisfactory results. All respondents had participated in it less than five years ago; 80% one year or less ago.

Table 1. Demographic data of research participants expressed as meaningful (S.D. or %) and [range].

	Number	Age	Work experience
KT	423 (54.6%)	42.0 (±10.2) [22-59]	19.9 (±11.8) [1-40]
KTA	351 (45.4%)	35.0 (±9.2) [19-57]	9.3 (±9.2) [1-38]
All	774 (100%)	38.9 (±10.5) [19-59]	15.3 (±12.0) [1-40]

Table 2. Kindergarten teachers' and their assistants' health knowledge self-evaluation in percentages.

Question	Statements (%)				
How would you rate your knowledge of health principles?	insufficient	sufficient	good	very good	excellent
	0.1	3.4	29.9	56.2	10.4
How would you rate your knowledge of first aid?	insufficient	sufficient	good	very good	excellent
	0.7	9.0	44.9	40.6	4.8
Where did you gain most of your knowledge of health principles?	at college or university	at seminars	at work	books, internet	elsewhere
	46.0	12.5	9.8	5.4	2.3
When did you have the last training on health principles?	1 year or less ago	1-5 years ago	5-10 years ago	10-15 years ago	more than 15 years ago
	81.6	18.4	0.0	0.0	0.0

KTs and KTAs are well aware of the importance of health knowledge in their work with children. As many as 87% strongly agree and 13% agree that it is important. If we combine this percentage, we see that all teachers are inclined to agree with the statement about the importance of health knowledge. Most (97%) know that they have to inform the headmaster and parents in case of a child's acute illness. Teachers have greater difficulty in knowing whether they may accompany a child to a doctor when an emergency arises. Over one half knows they may do so, while 18% think they have to ask child's parents (Table 3).

Table 3. Kindergarten teachers' and their assistants' responsibility related to health principles in percentages.

Question	Statements (%)			
Is knowledge of health principles important for KT and KTA?	**strongly agree**	**agree**	**do not agree**	**definitely do not agree**
	86.7	13.2	0.1	0.0
Is it true that, in case of acute illness, KT or KTA must inform kindergarten headmaster and parents?	**never**	**only for children aged 3 years or less**	**only if a child allows**	**always**
	2.9	0.3	0.0	96.8
Is it true that, in case of emergency, KT or KTA is not allowed to accompany a child to a doctor?	**true, a child can be accompanied only by parents**	**true, if the headmaster allows**	**true, if the parents allow**	**not true, a child can be accompanied by KT or KTA**
	22.7	8.0	17.9	51.4

Regarding some diseases and acute injuries, KT and KTA mainly show good knowledge of appropriate measures, but not with all injuries and conditions (Table 4). Almost all of them, 98%, know that a child with celiac disease mostly only eats gluten-free food. They would give a feverish child a glass of water and call the parents (83%), as required in the guidelines. Almost all KTs and KTAs (97%) know the symptoms of diabetes complications; 8 out of 10 can give an appropriate first aid in case of an arm abrasion. Half of KTs and KTAs have already given an antibiotic.

Table 4. Kindergarten teachers' and their assistants' knowledge of health principles in percentages.

Question	Statements (%)				
A child in a group has celiac disease. What is the correct measure?	**In case of a birthday party, I would give him/ her only a small piece of cake**	**The child has a diet, but at breakfast he/she can have one-quarter of a roll**	**Only gluten free food is permissible**	**In kindergarten, we do not account for the diets of children**	**I do not know**
	0.3	0.0	[98.3]	0.3	0.0
How would you react in case of high fever (>38.5 °C)?	**I would take him/ her immediately to the doctor**	**I would call the parents**	**I would separate the child from the class and wait for parents to come**	**I would check body temperature, give some water and call parents**	**I do not know**
	0.1	15.5	1.4	[82.9]	0.1
Which are the signs of diabetes complications?	**High body temperature**	**Incontinence disorders**	**Chest pain**	**Fatigue, drowsiness, hunger, thirst, shivering**	**I do not know**
	0.1	0.0	0.1	0.3	2.5
A child has an abrasion on his/her hand. What is the first aid?	**I would cover the abrasion with a clean pad**	**I would first wash the abrasion with water and then cover with a clean pad**	**I would first wash the abrasion with alcohol and then cover with a clean pad**	**I would call emergency medical services immediately**	**I do not know**
	0.1	0.0	0.1	0.3	2.5

Question	Statements (%)				
Have you ever been in a situation when parents brought antibiotics in the kindergarten and asked you to give them to their child at a certain time?	Yes	No	I do not remember	/	/
	40.1	[49.5]	10.4		

Note: Correct answers are in brackets.

Regarding febrile convulsions (Table 5), KTs and KTAs mostly agreed that they should cool down the child (78%), call emergency medical services (74%), and give medicine against fever, provided they had previously obtained a written authorization to do so (86%). 40% of respondents agreed that they could give medicine against fever convulsions, although the previously obtained written authorization to do so was not included in the statement.

The results also show that kindergarten professionals are familiar with hygiene principles. More than two-thirds state that hand washing is necessary after using the toilet, using toys, touching ones' nose and before meals. However, about half believe that hand washing is not so vital after using books (51%) or after shaking hands (45.1%).

Since contagious diseases are common among children, preventive measures represent the basis for infection control. All stated measures are particularly valuable for infection control. Room ventilation, disinfection of toys, sneezing and coughing into one's sleeve are all part of good hygiene practice in kindergartens; it can be confirmed that KTs and KTAs are very familiar with such practices (Table 5). The results also show that kindergarten professionals believe that hand disinfection is a preventive measure (81.3%). However, hand disinfection is not a preventive measure in kindergarten due to microbial resistance; therefore, this measure is only for health care services.

Table 5. Kindergarten teachers' and their assistants' responsibility related to health principles in percentages.

In a kindergarten, a child has febrile seizures. How would you react?			
Answers	Statements (%)		
	Agree	Disagree	I do not know
I would immediately give the child a medication to treat fever	40.1	[49.5]	10.4
I would cool down the child's body	[78.4]	15.3	6.1
I would immediately take the child to the doctor	28.2	[58.0]	13.7
I would give the child a medication to treat fever only in case of previously written authorisation	[86.4]	8.9	4.7
I would call the emergency service	[74.0]	18.0	8.0
How important is hand washing for infection prevention?			
After toilet use	[95.5]	0.0	0.5
Before a meal	[99.2]	0.1	0.6
After shaking hands	[53.1]	45.1	1.8
After touching one's nose	[90.5]	8.5	0.9
After using toys	[86.7]	12.4	0.9
After using books	[47.3]	51.0	1.7

How important are the following infection preventive measures?			
Answers	**Statements (%)**		
	Agree	**Disagree**	**I do not know**
Sneezing /coughing into a sleeve	[96.9]	2.5	0.7
Hand washing after touching animals	[96.4]	3.1	0.5
Separation of a sick child from the rest of the group	[92.5]	5.6	1.9
Hand disinfection	81.3	[17.7]	1.0
Preventive vaccination	[74.4]	20.6	4.9
Disinfection of toys	[97.7]	2.2	0.1
Ventilation of rooms	[99.7]	0.1	0.1

Note: Correct answers are in brackets.

The χ^2 test has shown there are statistically significant associations between the age of teachers and their assistants and the choice of whether they accompany a child to the doctor in case of emergency. The results show respondents would accompany a child to the doctor in the age group from 40 to 50 years in 32%, followed by the age group from 30 to 40 years (28%), the age group of <30 years (21%) and of >50 years (19%). Furthermore, there are statistically significant associations regarding their reaction to a child having a high fever, where only 17% of respondents in the age group of >50 years would check the child's body temperature, give heror him some water and call their parents. In the age group of <30 years, this would be done by 26% of respondents, 29% in the age group of 30 to 40 years, and 28% in the age group from 40 to 50 years. With regard to occupation, 58% of KTsand 42% of KTAs would monitor temperature and prevent dehydration. Results of our study also show that KT and KTA often face the situation when parents brought antibiotics in the kindergarten and asked to administer them. In the age group of <30 years, 18% of respondents are faced with this kind of situation, 22% in the age group from 30 to 40 years, 27% in the age group from 40 to 50 yearsand 33% in the age group of >50 years. Similar findings are related to the work experiences where respondents <10 years of work experiences were asked to administer antibiotics in 33% and those with >10 years of work experiences in 67%. Results also show that KTs are often asked to provide antibiotics for children (65%) in comparison to KTAs (35%). Statistically significant association was found between the age and last training in health principles, where in the age group of <30 years, 23% attended training in the last year, in the age group from 30 to 40 years 28%, in the age group from 40 to 50 years 30%, and 19% of KTs and KTAs aged >50 years (Table 6).

Table 6. Comparison of kindergarten teachers' and their assistants' answers regarding the age, work occupation and years of work experiences.

	Questions	***Statistics***					
		Age		**Occupation**		**Work experiences**	
		p-value	**sig.**	***p-value***	**sig.**	***p-value***	**sig.**
RESPONSIBILITY	**Knowledge of health principles is important for KT and KTA**	0.913	NS	0.222	NS	0.791	NS
	Is it true that, in case of acute illness, KT or KTA must inform the kindergarten headmaster and parents?	0.319	NS	0.992	NS	0.793	NS
	Is it true that, in case of emergency, KT or KTA should not accompany the child to the doctor?	0.000	**	0.459	NS	0.984	NS

	Questions	*Statistics*					
		Age		Occupation		Work experiences	
		p-value	sig.	*p-value*	sig.	*p-value*	sig.
HEALTH PRINCIPLES KNOWLEDGE	**A child in the group has celiac disease. What is the correct measure?**	0.465	NS	0.411	NS	0.611	NS
	How would you react in case of high fever (>38.5 °C)?	0.000	**	0.000	**	0.869	NS
	Which are the signs of diabetes complications?	0.008	*	0.890	NS	1.000	NS
	A child has an abrasion on his/her arm. What is the first aid?	0.764	NS	0.960	NS	0.180	NS
	Is it advisable to continue breastfeeding when a child is oneyear old and goesto the kindergarten?	0.619	NS	0.002	*	0.504	NS
	Have you ever been in a situation when parents brought antibiotics to the kindergarten and asked you to give them to the child at a certain time?	0.000	**	0.000	**	0.000	**
KNOWLEDGE EVALUATION	**How would you rate your knowledge of health principles?**	0.708	NS	0.829	NS	0.166	NS
	Where did you gain most of your knowledge of health principles?	0.010	*	0.773	NS	0.422	NS
	When did you have your last training in health principles?	0.000	**	0.547	NS	0.694	NS

Legend: * statistical significance p<0.05; ** strong statistical significance p<0.001; NS not statistically significant

4 DISCUSSION

Life-long education is becoming increasingly important. Supplementary education is necessary among skilled workers in educational institutions, including kindergartens. Because children are a vulnerable population group, teachers can encounter injuries and sudden illnesses at work. The first aid guidelines state that, in such cases, a quick and appropriatesequence of action is necessary (15). To fulfil these demands, KTs and KTAs are extremely well aware that at least a minimum level of knowledge is required. The results show that they attribute immense significance to such knowledge, as only 0.1% do not agree with the statement that the knowledge of health principles is important if one works with children. Self-evaluation of their knowledge on health principles confirms their awareness about its significance; most frequently, the respondents estimate it as very good, 4 (on the level 1–5; 5 is the highest grade). The self-evaluation of their first aid knowledge is worse; most frequently, they deemed it to be ‘good’, i.e. level 3. Most of their knowledge was obtained in school (almost one half). Especially intriguing were data regarding the most recent education on health principles: all respondents participated in such training less than five years previously, with 80% attended such training one year or less ago.

Recommendations for managing cases of emergency and sudden illness symptoms in kindergartens (14) state that it is necessary to call emergency services in life-threatening situations (112), and afterwards, inform the parents as soon as possible. The person who has given first aid accompanies the child to a medical institution and then waits there until the parents or guardians arrive. KTs and KTAs know the first part (calling emergency services) very well (97%), but only a half (51%) of them know that the person who has given first aid has to accompany the child to a medical institution. From the data of other research in Slovenia (16), we can assume that also teachers (all stated > 90% recognition) know very well the emergency number (112).

It is not necessary, in some cases, to take a child to a doctor immediately, although it is necessary to give the child appropriate first aid. In case of an abrasion onchild’s arm, 85% of respondents would properly take care of it by rinsing it with water and applying sterile coverage and bandages as dictated by the guidelines (17). The results of a similar research proved that skilled workers in kindergartens are theoretically qualified to give first aid in the case of non-life-threatening injuries, such as abrasions, scratches and minor burns. Less than 30% of respondents would take proper measures in case of unconsciousness, cardiac arrest, poisoning or suffocation, in accordance with the valid first aid practices (18). Based on the analysis of 117 documented injuries, for almost half of which medical care was required, Rok Simon (9) found that first aid given by 429 pedagogical workers was adequate only in half of the cases. Parents’ first aidgiven to their children was poor: only 10% of questioned parents would use proper methods to remove a foreign body obstruction in the airway of their suffocating child (19). When giving first aid to an unconscious child, only 9.5%

of respondents would first check responses (20). It has been shown that parents know how to act properly in circumstances that happen most frequently with their children and which could be sometimes fatal for the child (21). Neither Slovenian nor foreign (USA) parents are sufficiently educated in giving first aid to their children or in taking care of their children's wounds and burns (22).

In addition to injuries, kindergarten teachers deal with the increasing phenomenon of various chronic diseases, such as celiac disease and diabetes. While celiac disease was relatively rare some years ago, the latest research from around the world has shown that there is at least one patient for every 100 inhabitants (23). This means that about 20,000 people in Slovenia could have celiac disease. The latest data for Slovenia show that the typical kind of celiac disease in children occurs with the frequency of 2/1000 (24). Celiac disease is systematic immune condition disease that most often affects the small intestine. The disease reacts to the consumption of gluten, so patients are obliged to follow a gluten-free diet for the rest of their lives. KTs know this very well; 98% would not give an afflicted child food containing gluten.

Similarly, every year in Slovenia, more children fall ill with diabetes. The prevalence of type 1 diabetes among children increases by almost 4% annually (25). In case of diabetes complications, there are guidelines how to act, but one must be able to recognize the complications. Characteristic signs of hypoglycaemia are fatigue, drowsiness, hunger, thirst, shivering (15). A total of 97% of teachers correctly cited these. In Slovenia, the Department of Endocrinology, Diabetes and Metabolic Diseases at the University Children's Hospital Ljubljana, is the national centre for childhood diabetes, where teachers can gain knowledge about diabetes. Many teachers and other caregivers came annually to learn about diabetes in a one-day course (26). Besides the teachers, also children's parents play a crucial role in helping children with diabetes integrate into a new, kindergarten environment. In collaboration with the National Centre for Childhood Diabetes, Association for Children with Metabolic Disorders and Franciscan Family Institute, a parent support group was designed to provide psychosocial support for parents of children with diabetes. The group turned out to be a promising supportive, therapeutic and psychoeducational space. Effective psychosocial support to families is a part of integrative healthcare for children and adolescents with diabetes (27, 28).

Some disease conditions, including chronic conditions, require treatment with medication. About half of KTs and KTAs had been in a situation in which parents brought medicationto kindergarten (antibiotics), but we do not have the data as to whether they enclosed instructions and doctor's permission to administer the medicine. Results of statistical analysis show that KTs in the age group of >50 years, those with working experiences of >10 years, are more often faced with this situation than their younger and less experienced colleagues. As a rule, drugs should not be administered in the kindergarten. In exceptional cases, a medication may be given, for example, for a fever, but it is necessary to have parents' or guardians' previously written permission. KT and KTA could give a child a glass of water in case of fever and call parents (83%), as instructed in guidelines. The questionnaire did not give a teacher the opportunity to choose the possibility of administering drugs to a child with fever. In case of a known illness or the worsening of a chronic disease, such as febrile convulsions or asthma, it is necessary to have parents' or guardians' previously obtained written permission, as well as doctor's permission to administer the medicine and instructions on administering the medicine (14). In the hypothetical case of a child with febrile convulsions, teachers indicated agreement with statements about correct measures. As the guidelines indicate, they would cool down the child (78%), call urgentmedical help (74%) and administer medicine against fever, provided they had previously obtained written permission (86%); 40% of respondents said that they would administer medicine for febrile convulsions, although they made no mention of written permission to administer medicines.

We found that KTs and KTAs are familiar with the principles of hand washing. Most stated that hand washing is necessary after toilet use, before meals, after touching one's nose, and after playing with toys. Wong et al. (29) determined that a teacher's perception of risk increases after an outbreak of an infectious disease. Another study showed that one of the protective factors for hand-foot-mouth disease in kindergartens is hand washing (30). Our study showed that KTs and KTAs are familiar with the principles of hygiene and disease prevention, except regarding hand disinfection: 80% of respondents believe that this is a valuable preventive measure in kindergartens.

Based on the statistical analysis, we can indicate statistical characteristics with regard to age, occupation and work experiences. The results show significant differences ($p<0.05$) concerning the age of respondents and their choice of whether or not they would accompany a child to a doctor in case of emergency. In the age group from 40 to 50 years, 32% of KTs and KTAs would do so, whereasin the age group from 30 to 40 years 28% of KTs and KTAs would do so, followed by the age group of <30 years in 21% and >50 years in 19%. Moreover, there are statistically significant differences among age groups regarding their reaction to high fever, where in the age group <30 years this would be done by 26% of respondents, 29% in the group from 30 to 40 years, 28% in the group from 40 to 50 years and only 17% of respondents in the age group >50 years.

Our study is a significant contribution to the understanding of the importance of health education, since we found that age, occupation and years of working experience have no influence (p>0.05) on how KTs or KTAs would take care of children with celiac disease and give first aid for abrasions, and whether they would informa headmaster and parents.Nevertheless, we recognised that antibiotics are still a relevant topic and should be studied in the future.

5 CONCLUSIONS

KTs and KTAs are well aware of the importance of being familiar with health principles for children's safety in kindergartens. Kindergarten teachers and their assistants take part in frequent trainings in the principles of healthy ways of life. Therefore, it is understandable that they have evaluated their knowledge rather highly. However, according to their evaluations, their knowledge of basic first aid is rather low. We propose that it would be necessary also to include first aid topics in the on-the-job training, especially in view of recent changes to guidelines for resuscitation.

About half of the respondents stated that most of their knowledge about healthy way of living theyacquired during their schooling. This raises questions regarding current students, as the Bologna Process has eliminated health education from the curriculum. In view of the increase of chronic diseases among children and the frequency of injuries, knowledge about correct measures in such cases will become even more necessary.

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CONFLICTS OF INTERESTS

The authors declare that there is no conflict of interest.

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.

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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.

REFERENCES

1. Statistical Office of the Republic of Slovenia. Kindergartens, detailed data, Slovenia, school year 2012/13 – final data. Available Sept 20, 2013 from: http://www.stat.si/novica_prikazi.aspx?id=4578.
2. World Health Organisation. Pocket book of hospital care for children: guidelines for the management of common childhood illnesses. 2nd ed. Geneva: WHO Press. Available Sept 23, 2014 from: http://apps.who.int/iris/bitstream/10665/81170/1/9789241548373_eng.pdf?ua=1.
3. European Child Safety Alliance. Child safety report card 2012: Europe summary for 31 countries. Birmingham: European Child Safety Alliance, Eurosafe. Available Sept 22, 2012 from: http://www.childsafetyeurope.org/publications/info/child-safety-report-cards-europe-summary-2012.pdf.
4. Rok Simon M. Injuries of children and adolescents: analysis of mortality and morbidity. Ljubljana: National Institute of Public Health, 2007.
5. Government of the Republic of Slovenia. Strategija Republike Slovenije za zdravje otrok in mladostnikov v povezavi z okoljem 2012–2020. Ljubljana, 2011. Available Sept 5, 2013 from: http://www.mz.gov.si/uploads/media/strategija_zdravje_otrok_040212.pdf.
6. The United Nations Declaration on the Rights of the Child, 1959. Available Nov 27, 2014 from: http://www.unicef.org/malaysia/1959-Declaration-of-the-Rights-of-the-Child.pdf.
7. Eberl R, Schalamon J, Singer G, Ainoedhofer H, Petnehazy T, Hoellwarth ME. Analysis of 347 kindergarten-related injuries. Eur J Pediatr 2009; 168: 163-66.
8. Videmšek M, Štihec J, Karpljuk D, Meško M. Children's injuries in locomotor / sport activities in kindergarten. Sod Pedag 2009; 60(Suppl 3): 126–39.
9. Rok Simon M. Injuries of children in two kindergartens in Ljubljana in 1999. Zdrav Var 2002; 41: 309–14.
10. Law on kindergartens, Ur L RS 25/2008.
11. The book of rules and conditions for performing preschool education. Ur L RS 82/2005.
12. The law on safety in traffic. Ur L RS 25/2006.
13. Book of rules about organization, material and equipment for first aid on workplace. Ur L RS 136/2006.
14. National Institute of Public Health. Recommendations for action in kindergartens at emergencies and sudden illness incurred situations. Ljubljana: National Institute of Public Health, 2011.
15. International Federation of Red Cross and Red Crescent Societies. International first aid and resusciation guidelines 2011. Geneva: International Federation of Red Cross and Red Crescent Societies, 2011.
16. Slabe D, Medja M. Knowledge of the European number for emergency phone calls. Ujma 2007; 23: 170–5.
17. Nolan JP, Soar J, Zideman AD, Biarent D, Bossaert LL, Deakin C, et al. European resusciation council guidelines for resusciation 2011: section 1: executive summary. Resusciation 2010; 81: 1219-76.
18. Fink R, Slabe D. First aid knowledge in Slovenian kindergarten. In: International Scientific Conference, Solidarity for Social Capital, Portorož, 20–21 October, 2011: 423-30.

19. Izlakar J, Slabe D. First aid in infant with complete airway obstruction with foreign body: practical knowledge of laymen. In: Razvijanje medpoklicnega sodelovanja v času študija na področju zdravstvenih ved. 3. študentska konferenca s področja zdravstvenih ved. Maribor: Univerza v Mariboru, Fakulteta za zdravstvene vede, 2011: 35–43.
20. Brezavšček J, Peršonja Černe M, Karnjuš I. Parental knowledge in child first aid. In: Razvijanje medpoklicnega sodelovanja v času študija na področju zdravstvenih ved. 3. študentska konferenca s področja zdravstvenih ved, 2011. Maribor: Univerza v Mariboru, Fakulteta za zdravstvene vede, 2011: 45-53.
21. Karničnik A. Nujna stanja pri otrocih in prva pomoč staršev: diplomsko delo. Maribor: Univerza v Mariboru, Fakulteta za zdravstvene vede, 2010.
22. Singer AJ, Gulla, J, Thode J, Cronin KA. Pediatric first aid knowledge among parents. Pediatr Emerg Care 2004; 20(Suppl 12): 808-11.
23. Fasano A, Berti I, Gerarduzzi T, Not T, Colletti RB, Drago S, et al. Prevalence of celiac disease in at-risk and not-at-risk groups in the United States. Arch Int Med 2003; 163(Suppl 3): 268–92.
24. Slovensko društvo za celiakijo. O celiakiji, 2011. Available Sept 23, 2013 from: http://drustvo-celiakija.si/o_celiakiji/.
25. Battelino T, Phillip M, Bratina N, Nimri R, Oskarsson P, Bolinder J. Effect of continuous glucose monitoring on hypoglycemia in type 1 diabetes. Diabetes Care 2011; 34(Suppl 4): 795–800.
26. Bratina N, Shalitin S, Phillip M, Battelino T. Type 1 diabetes in the young: organization of two national centers in Israel and Slovenia. Zdrav Var 2015; 54: 139-45.
27. Pate T, Rutar M, Battelino T, Drobnič Radobuljac M, Bratina N. Support group for parents coping with children with type 1 diabetes. Zdrav Var 2015; 54: 79-85.
28. Drobnič Radoljubac M, Shmueli-Goetz Y. Attachment to caregivers and type 1 diabetes in children. Zdrav Var 2015; 54: 126-130.
29. Wong EMY, May MH Cheng, Lo SK. Teachers' risk perception and needs in addressing infectious disease outbreak. JOSN 2010; 26(Suppl 5): 398–406.
30. Zhu L, Chen C, Chen Z. Risk factors of hand-foot-mouth disease in kindergartens in Guangzhou. Chinese J School Health 2012; 10: 10–25.

10.1515/sjph-2016-0025 Zdrav Var 2016; 55(3): 195-201
Paut Kusturica M, Tomas A, Tomic Z, Bukumiric D, Corac A, Horvat O, Sabo A. Analysis of expired medications in Serbian households. Zdrav Var 2016; 55(3): 195-201

ANALYSIS OF EXPIRED MEDICATIONS IN SERBIAN HOUSEHOLDS

ANALIZA KOPIČENJA ZDRAVIL S PRETEČENIM ROKOM TRAJANJA V SRBSKIH GOSPODINJSTVIH

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ABSTRACT

Keywords:
drug wastage, households, expired medications, Serbia

Introduction. An ongoing issue of expired medications accumulating in some households is a universal problem around the world. The aim of the study was to investigate the extent and structure of expired medications in Serbian households, and to determine which therapeutic groups generated the most waste.

Methods. This was an observational, cross-sectional study conducted in households in the city of Novi Sad, Serbia. The study had been performed over 8 month period (December 2011 - July 2012) and it consisted of personal insights into the medication inventory in households.

Results. Of 1008 families, 383 agreed to participate and complete the questionnaire (38.3% response rate). In almost a half of households (44.4%), expired medications were maintained. The amount of expired medications was 402 items, corresponding to 9.2% of total medications presented in surveyed households. The majority of expired medications (64.7%) was in solid dosage (tablets, capsules, granules, lozenges), following semisolid (ointments, creams, gel, suppositories) and liquid dosage forms (drops, syrups). Expired medications in the households belonged mostly to 3 categories: antimicrobials for systemic use (16.7%), dermatological preparation (15.9%) and medications for alimentary tract and metabolism (14.2%).

Conclusions. This study revealed that there were relatively large quantities of expired medications in Serbian households, with a high prevalence of antibiotics for systemic use, anti-inflammatory and antirheumatic products, and medications for alimentary tract and metabolism.

IZVLEČEK

Ključne besede:
odpadna zdravila, gospodinjstva, zdravila s pretečenim rokom trajanja, Srbija

***Uvod**. Težava s kopičenjem zdravil s pretečenim rokom trajanja v gospodinjstvih je velik problem po vsem svetu. Cilj te študije je bil raziskati obseg in sestavo zdravil s pretečenim rokom trajanja v srbskih gospodinjstvih in določiti, katere terapevtske vrste zdravil predstavljajo največji odpad.*

***Metode**. Opazovalna, presečna raziskava je bila izvedena v srbskih gospodinjstvih v Novem Sadu. Trajala je osem mesecev (od decembra 2011 do julija 2012). Sestavljena je bila iz osebnega vpogleda v zalogo zdravil v gospodinjstvih.*

***Rezultati**. Od 1008 družin se jih je 383 odločilo za sodelovanje in izpolnilo vprašalnik (38,3-odstotna odzivnost). V skoraj polovici gospodinjstev (44%) so imeli zdravila s pretečenim rokom trajanja. Skupno sta bili najdeni 402 zdravili s pretečenim rokom trajanja, kar predstavlja 9,2% vseh zdravil v anketiranih gospodinjstvih. Večina zdravil s pretečenim rokom trajanja (64,7%) je bila v trdi obliki (tablete, kapsule, granule, lozenge), sledila so zdravila v poltrdni obliki (masti, kreme, geli, suspenzije) in tekočine (kapljice, sirupi). Večina zdravil s pretečenim rokom trajanja v gospodinjstvih pripada eni od naslednjih treh skupin: antimikrobna zdravila za sistemsko rabo (16,7%), dermatološki preparati (15,9%) in zdravila za bolezni prebavil in presnove (14,2%).*

***Zaključki**. Raziskava je pokazala, da je v srbskih gospodinjstvih shranjenih relativno veliko zdravil s pretečenim rokom trajanja. Najpogosteje se pojavljajo antibiotiki za sistemsko uporabo, protivnetni in antirevmatski pripravki ter zdravila za bolezni prebavil in presnove.*

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1 INTRODUCTION

Pharmaceuticals are produced and consumed in increasing volume every year and, as some people tend to accumulate medication, vast quantities go unused or expire. Medications may accumulate in households for a variety of reasons: improvement of the patient's medical condition, oversized medication packages resulting in leftover medications, death of the patient and change in prescription due to side effects or lack of therapeutic effect. Poor adherence, as the result of patients doubting the need for medication, fear of adverse effects or forgetfulness also contribute to the medication wastage (1, 2).

Stockpiling of expired medications in households is a significant and common public health issue worldwide (4). The potential presence of expired medications in households has, in the last 15 years, received attention due to its impact on health outcomes, health care cost, patient and environmental safety. Unsafe storage of expired medications at home leads to increased risk of toxicity, suicide and accidental childhood poisoning (5). Whilst pharmaceuticals can enter the environment during the production, consumption and disposal, incorrect disposal from households is considered the second major pathway into the environment. Recent research has shown that trace levels of ethinyl estradiol, which is an active compound of some contraceptives, have caused impaired sexual development and increased feminization of fish, whilst the presence of antibiotics in water has been associated with development of antibiotic resistance (6, 7). The consequence of improper disposal of household pharmaceutical waste is the presence of pharmaceuticals in groundwater, lakes, rivers, and even drinking water, which is a serious environmental problem that will continue to grow as the population expands and more medications are consumed. The environmental consequences and human health risk that this represents is intensely debated, and the real risk may not be known for years (8-11). Notwithstanding the health and environmental issues, medication wastage has a huge impact in monetary terms and can result in a substantial economic loss (12-14).

Expired medications in households are a fairly new topic analysed in a limited number of studies (2, 5, 16), so the true scope and magnitude of medication wastage in households is largely unknown. In order to collaborate effectively with Serbian health system and to improve medication prescribing, education, and appropriate use as well as disposal, we analysed expired medications in a sample of households in Serbia.

The aim of the study was to get insight into the extent and structure of expired medications in Serbian households and to determine which therapeutic groups and clinical areas generated the most waste. The attitudes of the population with respect to proper medication disposal practices were also analysed.

2 METHODS

This was an observational, cross-sectional study conducted in households in the city of Novi Sad, Serbia. The study protocol was approved by the Ethical Committee of the Faculty of Medicine in Novi Sad. The study has been performed over an 8-month period (December 2011–July 2012). The sample size was calculated according to the results of the pilot study researching medications in home pharmacies conducted in 2008 on 191 households in Novi Sad, Serbia, where the percentage of expired medications was 11.2%. Based on this result, a sample size necessary to estimate the proportion of expired medications with 95% confidence interval and 5% precision was 153 households. This research was conducted as a part of a larger study that researched the total inventory of medications in households, disposal practices and self-medication. The sample size necessary to estimate the extent of self-medication was 383 households; consequently, the larger sample size was used. Contacting 1,008 households using systematic random sampling of the telephone directory yielded 383 households willing to cooperate (response rate 38.0%). The study was performed by a trained interviewer. During a telephone conversation the interviewer identified the family member most informed about the content of household medication supplies (the respondent). The respondent received an explanation that the survey includes a visit to their home, as well as the inspection of home medicine cabinets. The respondents were Serbian speaking adults (at least 18 years of age) and a written consent was obtained from the respondent prior to the data collection. During the visit to the households that agreed to cooperate, all encountered medications were recorded. The interviewer examined where the medications were being stored, and counted the number of medications, while checking the expiry dates. The accessibility of the medications to children was also checked by an interviewer.

Afterwards, the respondents filled in the questionnaire. The structured questionnaire used in this survey consisted of 3 parts and 13 questions. The first part of the questionnaire (7 questions) was related to the sociodemographic characteristic of the population (the number of household members, age, gender, occupation and education of respondent). In order to investigate the possible associations between the presence of expired medications in households and some of characteristics of households (the presence of persons aged >65 years or children aged <12 years in their households), this information was also recorded. The second part of the questionnaire focused on questions (3) related to expired medications and their disposal.

Statistical analysis was performed with SPSS software (SPSS 15.0 for Windows, SPSS Inc., Chicago, IL USA). Descriptive statistics on the distribution of the number of packages in the surveyed households was performed. For parametric data of independent samples t-test was used to test differences between groups. For numeric data with non-normal distribution and ordinal data Mann-Whitney U test was used. Chi-square test was used to test differences between nominal data (frequencies). All p values less than 0.05 were considered significant.

3 RESULTS

In almost a half of households (170, 44.4%), expired medications were maintained. The total amount of expired medications was 402 items, corresponding to 9.2% of all medications present in surveyed households. Of the total expired medications, 70.4% were prescription-only and 29.6% were over-the-counter (OTC) medications. The majority of expired medications (260, 64.7%) were in solid dosage forms (tablets, capsules, granules, lozenges), following semisolid (ointments, creams, gels, suppositories) and liquid dosage forms (drops, syrups) (Table 1).

Table 1. Dosage forms of expired medications.

Dosage forms	Items	
	N	%
Tablets, capsules, dragées, lozenges, powders	260	64.7
Ointments, creams, gel, suppositories	88	21.9
Drops, syrups	48	11.9
Inhalers, sprays	6	1.5
Total	402	100.0

Expired medications classified according to ATC classification are presented in Tables 2 and 3. Predominant therapeutic groups among expired medications were anti-infectives for systemic groups (16.7%), dermatologicals (15.9%) and medications for alimentary tract and metabolism (14.2%).

Table 2. Dosage forms of expired medications.

ATC	N	%
J-anti-infectives for systemic use	67	16.7
D-dermatologicals	64	15.9
A-alimentary tract and metabolism	57	14.2
M-musculo-sceletal system	48	11.9
R-respiratory system	46	11.4
N-nervous system	44	10.9
C-cardiovascular system	27	6.7
S-sensory organs	18	4.5
B-blood and blood forming organs	15	3.7
G-genito-urinary system and sex hormones	13	3.2
H-systemic hormonal preparations, excluding sex hormones and insulins	2	0.5
P-anti-parasitic products, insecticides and repellents	1	0.2
L-antineoplastic and immunomodulating agents	0	0
Grand Total	402	100

Table 3. ATC therapeutic categories (level II) of expired medications.

ATC	Therapeutic groups	N	%
J01	Antibacterials for systemic use	66	16.4
M01	Anti-inflammatory and antirheumatic products	35	8.7
N02	Analgesics	31	7.7
D07	Corticosteroids, dermatological preparations	25	6.2
D06	Antibiotics and chemotherapeutics, dermatological	24	6.0
R01	Nasal preparations	22	5.5
A07	Antidiarrheals, intestinal anti-inflammatory/anti-infective agents	17	4.2
R05	Cough and cold preparations	13	3.2
S01	Ophthalmologicals	12	3.0
A03	Drugs for functional gastrointestinal disorders	11	2.7
B03	Antianemic preparations	11	2.7
A02	Drugs for acid related disorders	11	2.7
Other		278	69.0
Total		402	100.0

The opinion of the majority of the respondents was that medications should not be used after the expiration date (75.2%). However, a fifth of the respondents (20.4%) agreed that medications can be used 6 months after the expiration date. Despite the fact that the majority of respondents (66.3%) think throwing medications into the garbage has detrimental effects on the environment, this was the predominant disposal method among the surveyed households (82.8%). Only 4.4% of the respondents reported returning expired medications to a pharmacy (Table 4).

Table 4. Participants' responses to the question related to expired medications and their disposal.

The availability of expired medications to children	**N**	**%**
yes	91	69.6
no	41	30.4
total	132	100.0
In your opinion, can medicationsbe used after the expiration date?	**N**	**%**
yes	10	2.6
yes, 6 month after the expiration date	78	20.4
no	288	75.2
don't know	7	1.8
Do you think that disposal of expired medication into the garbage has detrimental effects on the environment?	**N**	**%**
yes	254	66.3
no	52	13.6
don't know	77	20.1
How do you currently dispose of expired medications?	**N**	**%**
into the garbage	317	82.8
flush down the toilet or sink	11	2.9
return to pharmacy	17	4.4
store	3	0.8
burn	7	1.8
always use till the end	28	7.3
total	383	100.0

As presented in Table 5, the number of expired medications in households was significantly associated with the family size, level of respondents' education, presence of children younger than 12 years ($p<0.05$).

Table 5. Demographic and socioeconomic characteristics associated with expired medications in households.

Variable	Households with no expired medications	Households with expired medications	p
Family size	2.7±1.2	3.0±1.1	0.002
Gender			0.963
male	43 (20.1%)	34 (20.0%)	
female	170 (79.9%)	136 (80%)	
Elderly ≥65 years			0.094
no	183 (85.9%)	156 (91.8%)	
yes	30 (14.1%)	14 (8.2%)	
Education			0.007
elementary school	18 (8.4%)	9 (5.3%)	
secondary school	103 (48.3%)	66 (38.8%)	
junior college	15 (7.1%)	10 (5.9%)	
degree	77 (36.3%)	85 (50.0%)	
Occupation			0.088
employed	106 (49.7%)	107 (62.9%)	
unemployed	39 (18.3%)	23 (13.5%)	
student	12 (5.6%)	6 (53.5%)	
retiree	56 (26.3%)	34 (20.0%)	
Children ≤12 years			0.019
yes	64 (30.0%)	71 (41.8%)	
no	149 (70.0%)	99 (58.2%)	

4 DISCUSSION

4.1The Extent and Type of Expired Medications in Serbian Households

To the best of our knowledge, our study analysed for the first time the contents of a pharmaceutical waste generated in households in Serbia. Although this study collected information on the percentage and types of medications that expired without investigating the underlying reasons for not using them, it provides evidence to an under-researched area.

The findings are mostly consistent with other studies in terms of the percentage of expired medications, but varied in the most common therapeutic groups. The extent of expired medications in Serbian households of 9.2% is comparable to those reported in Croatia, where expired medication comprised 10.8% of total household medication supplies (17).

More than 70% of expired medications in Serbian households were prescription-only medications. The existence and extent of expired prescription medications could be adopted as a direct measure of non-compliance and poor adherence by the patient population, as demonstrated in many studies. For example, in the United Kingdom, only one third of people surveyed did not complete a course of the prescribed medication. In addition, more than 20% of the prescribed medications in British homes were not being taken, while 14% of prescribed medications were partly used. In an Iranian and the British study, approximately 10% of patients who filled their prescriptions have never taken the prescribed medications (12). Notwithstanding the reasons for leftovers of prescription medications, these medications can definitely lead to unintentional pharmaceutical poisonings of children, facilitate abusive use, and promote emerging social problems, such as teenage "pharming", a recreational use and abuse of prescription medications among teenagers (18).

The structure of expired medication according to the type of formulation was similar to other studies with by far the highest percentage of solid dosage forms, followed by semisolids (e.g. crème, ointments) (15). In our study, the expired medications in the households belonged mostly to 3 categories: anti-microbials for systemic use, dermatological preparations, and medications for alimentary tract and metabolism. On the contrary, both Mexican and U.S. studies reported the painkillers and cardiovascular medications as the most common expired medications, while antibiotics occupied the third place (15, 16). In our opinion, as these studies were carried out in different countries, these differences are potentially attributable to the difference in demographic characteristics, health seeking practices or different supply ways of medications in surveyed households. However, the main reason for large quantities of expired antibacterials stored in Serbian households was easy access. This study was conducted just after Serbian authorities enforced stricter law rules regarding antibiotics' acquisition in November 2011. Until then, antibiotics were routinely available without a medical prescription in private pharmacies.

The second possible reason for the levels of storage of antibacterial medications is patients' non-compliance with recommended treatments. The presence of expired antimicrobial agents implicates that the patients did not complete the full dispensed course, and left-over antibiotics might later be used for self-medication without proper indication, in insufficient quantities, or even when contraindicated (7, 19). In contrast to a Mexican study, where dermatological preparations comprised less than 2% of all medications expired, they ranked second in households in Novi Sad, with mostly topical antibiotics and corticosteroids.

Expired medications from alimentary tract category were also commonly encountered in Serbian households. Many of the gastrointestinal tract (GIT) medications are OTC medications (e.g. antacids, laxatives), which could partially explain the high percentage of expired GIT medications. Abushanab et al. also identified medications for alimentary tract and dermatologicals as the medications that commonly go unused and expire (19).

Surprisingly, the expired cardiovascular medications comprised a noticeably lower percentage of expired medication in households than in other studies (15, 16). This discrepancy could be partially attributed to the demographic characteristics of surveyed Serbian households (e. g. low presence of persons older than 65). In addition, Serbian National Health Insurance Fund allows for chronic disease medications, including cardiovascular medications, to be prescribed in maximum two months' course, definitely decreasing the possibility of the medication passing the expiry date. A high percentage of medications belonging to musculoskeletal (mostly anti-inflammatory and antirheumatic products) and nervous system (mostly analgesics) was also demonstrated in other studies (11, 16, 18, 22).

4.2 Expired Medications and their Disposal

The attitude of around a fifth of the Serbian respondents is that medication can be used up to 6 months after the expiration date, while the majority thought that expired medications should not be used. This is in accordance with the general opinion that expiration date is the end of the useful life of the medication. However, this may not be necessarily true, since the labelled expiration date is the final day that the manufacturer guarantees the full potency and safety of a medication, while the actual shelf life of some products is, in fact, longer (15).

Despite the fact that Serbian public was generally concerned on how improper medication disposal detrimentally effects the environment, the behaviour regarding disposal of unused medications did not equate the awareness. A previous study carried out in South Backa District, Serbia, showed that environmental awareness may not necessarily affect how people dispose of their medications, because other factors, such as the availability of formalized disposal protocols, may also play an important part (7, 20). However, according to Food and Drug Administration (FDA) recommendations, where no organized collection system exists, a disposal of medications in domestic garbages destined for landfills is accepted as more environmentally friendly than flushing them down the drain. Actually, in this situation, medications may be disposed of in the household trash by removing them from their original containers, mixing them with unpalatable substances, such as kitty litter or used coffee grounds, placing the mixture in a sealed plastic container, and putting that sealed container into the household trash (21, 22).

Disposal of expired medications into the garbage, the leading method of disposal in Serbia, has also been identified as the predominant way of disposal in Kuwait, United Kingdom and Lithuania (4). Disposal of medications into the sewage system is still a common practice in New Zealand, USA and Bangladesh, and is mostly reserved for liquid dosage forms (6, 23, 24). In contrast, in Sweden, a country with a long tradition of the reverse distribution network for the collection of unused and unwanted medications, a high percentage of population returns unused medications to pharmacies (43%). Sweden is an excellent example of how the essential part of communicating a message to the public is to postulate a clearly defined mechanism for disposal and an unambiguous obligation on specified agent/agencies to take medications for disposal (25). Also, confusion over the adequate methods of medication disposal still exists in many countries, mostly because of conflicting or incomplete guidelines for disposal of unused medications (4).

4.3 Limitations

Despite the fact that an in-home inventory of medications obtained by direct observation has been shown to be a more reliable measurement tool than self-report recall methods, some weaknesses of our study need to be mentioned. First of all, it may be difficult to extrapolate our study results to the other parts of our country, because Novi Sad, a wealthy university city, might not be representative of Serbia in general. Secondly, answers to the questions regarding disposal habits and attitudes are self-reported in nature, and some respondents may not have been telling the truth. Notwithstanding these limitations, the study adds information to the area of scant knowledge.

4.4 Study Implications

Serbia must seriously consider the issue of medication wastage. A part of this wastage can be prevented and, considering the limited health resources of the country, it is prudent to start taking action. Firstly, like in many countries, Serbian government should limit prescription medication wastage by dispensing medication according to the exact number needed for treatment, rather than by the original pack, and also by increasing compliance through educational campaigns targeting different age groups and using various communication routes. Also, in order to limit environmental effects of improper expired medication disposal, an established formalized state-run disposal system that is cost-effective and easily accessible is necessary in Serbia.

5 CONCLUSIONS

This study revealed that expired medications were commonly encountered in Serbian households, with a high prevalence of antibiotics for systemic use, anti-inflammatory and antirheumatic products, and medications for alimentary tract and metabolism. Throwing medications into the garbage was the predominant disposal method among the surveyed households, despite the fact that more than a half of the population is aware of the harmful effects of improper medication disposal on the environment.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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ETHICAL APPROVAL

Received from the Ethical Committee of the Faculty of Medicine in Novi Sad.

REFERENCES

1. Bound JP, Voulvoulis N. Household disposal of pharmaceuticals as a pathway for aquatic contamination in the United Kingdom. Environ Health Perspect 2005; 113: 1705–11.
2. Vogler S, Leopold C, Zuidberg C, Habl C. Medicines discarded in household garbage: analysis of a pharmaceutical waste sample in Vienna. J Pharm Policy Pract 2014; 7: 6.
3. Coma A, Modamio P, Lastra C, Bouvy M, Mariño. Returned medicines in community pharmacies of Barcelona, Spain. Pharm World Sci 2008; 30: 272–7.
4. Tong AYC, Peake BM, Braund R. Disposal practices for unused medications around the world. Environ Int 2011; 37: 292–8.
5. Annear B, Sinklair K. Response to returned medicines: waste or a wasted opportunity? J Public Health 2008; 30: 209-10.
6. Braund R, Peake BM, Shieffelbien L. Disposal practices for unused medications in New Zealand. Environ Int 2009; 35: 952–5
7. Kusturica MP, Sabo A, Tomic Z, Horvat O, Solak Z. Storage and disposal of unused medications: knowledge, behavior, and attitudes among Serbian people. Int J Clin Pharm 2012; 34: 604–10.
8. Daughton CG. Cradle to cradle stewardship of drugs for minimizing their environmental disposition while promoting human health. II Drug disposal, waste reduction, and future directions. Environ Health Perspect 2003; 111: 775–85.

9. Jones OA, Voulvoulis N, Lester JN. Potential impact of pharmaceuticals on environmental disposition while promoting human health. Bull World Health Organ 2003; 81: 768–9.
10. Schwab BW, Hayes EP, Fiori JM, Mastrocco FJ, Roden NM, Cragin D, et al. Human pharmaceuticals in US surface waters: a human health risk assessment. Regul Toxicol Pharmacol 2005; 42: 296–312.
11. Webb S, Ternes T, Gibert M, Olejniczak K. Indirect human exposure to pharmaceuticals via drinking water. Toxicol Lett 2003; 142: 157–67.
12. Zargarzadeh AH, Tavakoli N, Hassanzadeh A. A survey on the extent of medication storage and wastage in urban Iranian households. Clin Ther 2005; 27: 970–8.
13. Abou-Auda HS. An economic assessement of the extent of medication use and wastage among families in Saudi Arabia and Arabian Gulf countries. Clin Ther 2003; 25: 1276–92.
14. Morgan TM. The economic impact of wasted prescription medication in an outpatient population of older adults. J Fam Pract 2001; 50: 779–81.
15. Gracia-Vasquez SL, Ramirez-Lara E, Camacho-Mora IA, Cantu-Cardenas LG, Gracia-Vasquez YA, Esquivel-Ferrino PC, et al. An analyses of unused and expired medications in Mexican households. Int J Clin Pharm 2015; 37: 121-6.
16. Law AV, Sakharkar P, Zargarzadeh A, Hess K, Mireled R, Park T. Taking stock of medication wastage: unused medications in US households. Res Social Adm Pharm 2014; 11: 571-8.
17. Aljinovic-Vucic V, Trkulja V, Lackovic Z. Content of home pharmacy and self-medication practices in households of pharmacy and medical students in Zagreb, Croatia: findings in 2001 with a reference to 1977. Croat Med J 2005; 46: 74–80.
18. Ruhoy IS, Daughton CG. Beyond the medicine cabinet: an analysis of where and why medications accumulate. Environ Int 2008; 34: 1157-69.
19. Abushanab AS, Sweileh WN, Wazaify M. Storage and wastage of drug products in Jordanian households: a cross-sectional survey. Int J Pharm Prac 2013; 21: 185-91.
20. Kotchen M, Kallaos J, Wheeler K, Wong C, Zahller M. Pharmaceuticals in wastewater: behaviour, preferences, and willingness to pay for a disposal program. J Environ Manag 2009; 90: 1476–82.
21. Department of Health and Human Services (US). How to dispose of unused medicines: consumer health information. Silver Spring (MD): Food and Drug Administration. Available Jan 29, 2014 from: http://www.fda.gov/forconsumers/consumerupdates/ucm101653.html.
22. Thompson CA. Return-and-disposal programs commence at health systems. Am J Health Syst Pharm 2007; 64: 1254–5.
23. Seehusen DA, Edwards J. Patient practices and beliefs concerning disposal of medications. J Am Board Fam Med 2006; 19: 542–7.
24. Khalid Labu KZ, Mamun A, Abdullah MM, Harun M, Sikder K. Knowledge, awareness and disposal practice for unused medications among the students of the Private University of Bangldesh. J Biomed Pharm Res 2013; 2: 26-33.
25. Persson M, Sabelstro¨m E, Gunnarsson B. Handling of unused prescription drugs-knowledge, behavior and attitude among Swedish people. Environ Int 2009; 35: 771–4.

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PREVALENCE OF PROBLEMATIC INTERNET USE IN SLOVENIA
RAZŠIRJENOST PROBLEMATIČNE UPORABE INTERNETA V SLOVENIJI

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ABSTRACT

Keywords:
Internet addiction, problematic Internet use, assessment, prevalence, epidemiology, behavioural addiction

Background. Internet use is an integral part of our everyday activities; however, Internet use may become problematic and harmful in a minority of cases. The majority of reported prevalence rates of problematic Internet use refer to adolescent samples, whereas epidemiological studies on representative adult populations are lacking. This study aimed to reveal the prevalence and characteristics of problematic Internet use in Slovenia.

Methods. Problematic Internet Use Questionnaire (PIUQ) was included in European Health Interview Study (EHIS) on representative Slovenian sample. The frequency of Internet use and problematic Internet use were both assessed.

Results. 59.9% of Slovenian adult population uses the Internet daily, and 3.1% are at risk of becoming problematic Internet users, 11% in the age group from 20 to 24 years. Those being at risk for becoming problematic Internet users are younger (mean age 31.3 vs. 48.3 for non-problematic users), more likely to be males (3.6% of males, whereas 2.6% of females are affected), students (12.0%), unemployed (6.3%) or unable to work (8.7%), single (6.5%), with high education (4.5%). Regression analysis revealed that the strongest predictor of being at risk for problematic Internet use is age (ß=-0.338, p<0.001); followed by high educational level (ß=0.145; p<0.001) and student status (ß=0.136; p<0.001).

Conclusion. 3.1% of Slovenian adult population are at risk of becoming problematic Internet users, whereas 3 out of 20 Slovenian adolescents aged from 18 to 19 years are at risk (14.6%). Prevention programs and treatment for those affected are paramount, especially for the young generation.

IZVLEČEK

Ključne besede:
zasvojenost z internetom, problematična uporaba interneta, razširjenost, epidemiologija, vedenjske zasvojenosti, nekemične zasvojenosti

***Namen.** Internet je sestavni del naših življenj, vendar pa lahko ima prekomerna uporaba interneta pri posameznikih neugodne posledice. Zasvojenost z internetom je sodoben fenomen, konceptualno še nedorečen, vse več raziskav pa opozarja na problematično uporabo interneta in njene posledice. Večina tovrstnih študij je bila izvedenih na vzorcu mladih in študentov, medtem ko jih na reprezentativnih vzorcih odraslih - kot je primer te študije - primanjkuje. Namen pričujoče raziskave je bil ugotoviti razširjenost in lastnosti problematične uporabe interneta v Sloveniji.*

***Metode.** Vprašalnik o problematični uporabi interneta (ang. Problematic Internet Use Questionnaire) je bil pridružen Anketi o zdravju in zdravstvenem varstvu, izvedeni na reprezentativnem slovenskem vzorcu. Izmerjeni sta bili pogostost uporabe interneta in problematična uporaba interneta.*

***Rezultati.** 59,9% slovenske odrasle populacije dnevno uporablja internet in 3,1% jih je izpostavljenih tveganju, da postanejo problematični uporabniki interneta, kar 11% jih je v starostni skupini od 20 do 24 let. Tveganju so izpostavljeni predvsem mlajši (njihova povprečna starost je 31,1 let v primerjavi s povprečno starostjo neproblematičnih uporabnikov 48,3 let, ob upoštevanju da je bila starost analizirane populacije med 18 in 95 let); bolj verjetna je med moškimi (3,6% moških v primerjavi z 2,6% žensk, ki so izpostavljene tveganju), študenti (12,0%), brezposelnimi (6,3%) in osebami, nezmožnimi za delo (8,7%), samskimi (6,5%) ter osebami z višjo izobrazbo (4,5%). Regresijska analiza je pokazala, da je najmočnejši pokazatelj tveganja za razvoj problematične uporabe interneta starost (ß=-0,338, p<0,001), sledi ji univerzitetna izobrazba (ß=0,145; p<0,001) in status študenta (ß=0,136; p<0,001).*

***Zaključek.** 3,1% slovenske odrasle populacije je izpostavljene tveganju, da postanejo problematični uporabniki interneta. Najbolj so izpostavljeni mladi, stari med 18 in 19 let: kar trije od dvajsetih (14,6%). Ključnega pomena je priprava preventivnih programov s posebnim poudarkom na mladih ter nudenje terapije tistim, ki jo potrebujejo.*

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1 INTRODUCTION

Compared to 2000, Internet use has more than doubled by 2011 (1). Slovenian data show that in 2011 73% households had access to the Internet and 97% individuals between 16 and 74 years old used the Internet (2). Despite the fact that the use of Internet is an everyday activity for most people, when taken to the extreme, it may cause serious harm to the individual and/or to his or her social environment. Although the consensual definition and criteria of problematic Internet use (PIU) is still lacking, the majority of scholars agree that problematic Internet use is associated with addiction-like symptoms (3). There are several conceptual models of PIU (4), such as the components model by Griffiths (5, 6), the cognitive-behavioural model by Davis (7), the model of Young (8), or the model by Tao and colleagues (9). The components model of Griffiths (6), for example, states that six criteria are essential for a diagnosis of PIU: (i) salience: Internet use becomes the most important activity in the person's life, which dominates their thinking, feelings, and behaviour; (ii) mood modification: using the Internet to get into a better mood; (iii) tolerance: increasing amounts of Internet use are required to achieve the former mood-modifying effects; (iv) withdrawal: withdrawal-like symptoms (e.g., irritability, moodiness, shakes) if Internet use is discontinued or suddenly reduced; (v) conflict: conflicts within the individuals themselves, conflicts with others, and conflicts with other activities (e.g., work, school, hobbies, social life) due to excessive Internet use; and (vi) relapse: restarting the activity with the same intensity after a period of abstinence or control. Furthermore, similar to the various conceptual models, different terms are used to address the problematic behaviour, such as Internet addiction (6, 8, 9), pathological Internet use (7), or problematic Internet use (3). We prefer the latter term because it describes both the quintessence of the phenomenon (i.e., not only is the behaviour excessive, but problems related to Internet use are also expected to be present), while avoiding the notion of dependency, addiction, or disorder until a specific definition and diagnostic criteria is clarified and agreed upon.

Problematic Internet use is a heterogeneous concept. According to Griffiths (10),we have to differentiate between dependence on the Internet, and dependence to the Internet. He argues that the majority of individuals presenting with PIU are simply using it as a medium to fuel other addictive behaviours, such as cybersex addiction. In line with the current debate in the field, Internet Gaming Disorder is now included in the appendix of the DSM-5 (11) as a condition that requires further empirical and clinical research. Other excessive online activities, not involving playing online games (e.g., excessive use of social media, such as Facebook; viewing pornography online), were not included in the appendix due to the lack of sufficient research in this area.

Despite heterogeneity, PIU is clearly associated with indicators of psychosocial problems, such as loneliness (12, 13), low well-being (14), low self-esteem (15) and social maladaptation (13). Furthermore, PIU is frequently co-morbid with other mental health issues, such as alcohol and substance use, depression, social phobia and phobic anxiety, schizophrenia, obsessive-compulsive disorder, psychoticism, and even suicidal ideation (16).

There were several studies conducted in Slovenia on Internet addiction. For example, in 2001, Jeriček adapted Young's questionnaire (i.e., Internet Addiction Test) on a sample of 3rd year high school students in Ljubljana (N=1194). Based on the 14 items, high school students display only a few symptoms of PIU: 3.7% of the sample scored 4 or 5 on more than half of items, which was the criteria for problematic use. There were significant differences among different types of schools, time and place of Internet use. Furthermore, gender and school performance were equally important predictors of problematic use (17). In 2004, Šimek conducted a research on PIU among high school students in Maribor (N=622), using Young's instrument. In this study "only" 1.8% were classified as problematic users (18). In another study using a qualitative (interview-based) approach, Internet users reported mild signs of PIU only in certain segments of use (19). Recently, Primožič focused on mental instability in relation to PIU (online study, N=381) and found that mental instability explains only minor part of PIU. Individuals with strong preference for online social interactions were more prone to develop PIU than those with milder preference (20).

Similar to Slovenian studies, most other studies on PIU target mainly adolescent and student samples as well, including nationally representative epidemiological studies (16, 24). However, in contrast to the abundance of epidemiological studies in adolescent populations, to our knowledge, there are very few adult representative studies to estimate the prevalence of PIU to date, probably because of the challenges regarding the diagnostic criteria and the heterogeneous nature of the disorder. In Norway, the prevalence of PIU was 0.7% (21), whereas in the USA, the prevalence was estimated to be around 1% (22), according to two studies published in 2009 and 2006, respectively. The same prevalence rate (1%) was reported in Germany in a general population sample (23) in a study published in 2014. Although there are numerous studies reporting the epidemiology of PIU in adolescent and student samples across the world (16, 24), to our knowledge, no other studies have investigated the prevalence of problematic Internet use among adults in national representative samples before. For this reason, the aim of the current study was to estimate the extent of problematic Internet use among Slovenian adult population.

2 METHODS

2.1 Sample and Procedure

The sample was selected from the Central Registry of Slovenia by Statistical office. The target population were all Slovenian residents, aged 15 years or older, on the day (13 August 2014) residing in private households. Stratified sampling was applied to gather data in statistical regions (NUTS3 level – 12 regions in Slovenia) and type of settlement (6 strata; according to the type (rural/urban) and size of the settlement). One thousand one hundred primary sampling units were selected in the first stage with probability proportional to the size. In the second stage, 10 persons were selected in each sampling unit, resulting in 11,000 persons. These individuals were invited to complete the survey on the Internet. The ones who did not complete it online, but expressed their interest in participating, were invited to complete the questionnaire with the help of a trained interviewer. Mixed interview method proved to be the added value of the current study, given that participants had the choice to choose a more convenient way of responding, in addition to reducing the effect of social desirability. In addition, Internet survey reached younger population that is less likely to respond via personal interviews. As a result, we believe that more participants agreed to participate, given the flexible approach as opposed to using a single technique. In the end, 47.6% of participants responded online and 52.4% via personal interviews.

Questionnaires were administered between 25 August 2014 and 30 November 2014, via CAPI (Computer assisted personal interviewing) or CAWI (Computer assisted web interviewing). Following data collection, data was filtered based on the screening test. We calculated the percentage of nonresponse and validated open-ended questions. Non-participation was statistically controlled by weighting. Survey weights were obtained via automatic iterative weighting ('raking') procedure (custom-made code in R), using population margin for sex, age groups, NUTS-3 regions, the highest level of completed education and degree of urbanization.

The final data set consisted of 6282 individuals who were at least 15 years old, but the current study focused on those participants who were minimum 18 years of age (N=6029). The sample reflected the structure of Slovenian adult population: 49.0% of males and 51.0% of females. Out of the total sample, 48.7% were employed or self-employed, 31.4% of the sample represented retired people, 6.7% of the sample were students and one tenth of the sample were unemployed. The majority had secondary education[1]; the mean age was 49.2 years (age range 18 to 95, SD=17.9) (see Table 1).

Table 1. The sample (N=6029) structure.

SAMPLE STRUCTURE	N	%
Gender		
male	2956	49.0%
female	3073	51.0%
Marital status		
single	1877	31.8%
married or living together	3147	53.3%
widow	556	9.4%
divorced	326	5.5%
Primary occupation		
employed	2635	44.5%
self-employed	252	4.2%
unemployed	623	10.5%
student	396	6.7%
retired	1861	31.4%
unable to work	56	0.9%
housewife	101	1.7%
Education		
primary school or less	1448	24.2%
secondary school	3241	54.3%
university degree or more	1283	21.5%
Age	Mean	(std.dev.)
male	47.7	(17.0)
female	50.6	(18.7)

2.2 Measures

Basic socio-demographic variables, such as gender, age, marital status, occupational status and education, were collected in European Health Interview Survey along with the frequency of Internet use and problematic Internet usage. Problematic Internet use was assessed using the Problematic Internet Use Questionnaire Short-Form (PIUQ-SF-6) (25). This instrument derives from the 18-item Problematic Internet Use Questionnaire, which assesses three dimensions of the problem behaviour: obsession, neglect, and control disorder (26). The shorter version followed the original three-factor structure, each measured by two items (see Figure 1 for this instrument). The initial structure was tested with confirmatory factor analysis, which indicated acceptable fit to the data (χ^2=212.4, df=6, p<0.001; CFI=0.983; TLI=0.957;

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[1] Education was measured by 12 levels; secondary school was represented by 3 categories: 3-year vocational training, 4-years vocational training, and gymnasium.

RMSEA=0.083 [0.074-0.093]). Participants used a 5-point Likert scale (from "never" to "always/almost always") to estimate how much the given statement characterized them. Scores ranged from 6 to 30, with higher scores indicating increased problematic Internet use. Latent profile analysis (LPA) was used with the six PIUQ-SF items as input variables to determine latent groups. LPA resulted in two groups, one with average score on the six PIUQ-SF items and another one with relatively high values. This second group was considered to be at risk of problematic Internet use. Taking this group as the gold standard, we analysed the sensitivity, specificity, positive and negative predictive value and diagnostic accuracy of each cut-off score, and chose the one with the best indicators, which was the score of 15. Both instruments showed good psychometric properties (25-27). Internal consistency (Cronbach alpha) of the 6-item PIUQ was 0.8 in the present sample.

In our research, only respondents who frequently use the Internet were offered the PIUQ-6 set of questions. The screening question was: "How often did you use the Internet in the last 3 months on average?" It was scored as 1=every day or almost every day; 2=at least once a week; 3=less than once a week. Answers 2 and 3 were interpreted as non-problematic Internet users and only the rest of the sample received PIUQ-6 set of questions. Answers were summed up[2] and those who scored 15 or more were considered problematic Internet users. Those having one or more missing values on PIUQ-6 scale were not included in the calculation of problematic Internet use. For all analyses, bivariate statistical methods (chi-square test and t-test for two independent samples) and multivariate regression analysis were used to calculate group differences and effect.

3 RESULTS

3.1 The Frequency of Internet Use

Given that the concept of problematic Internet use encompasses frequent use of the Internet, PIUQ-6 questions were only administered to those participants who reported using the Internet every day or almost every day (59.9%). Table 2 shows that over one tenth of the adult sample (11.7%) reported using the Internet at least once a week, but not every day, whereas 28.5% uses the Internet less than once a week. Both categories were identified as non-problematic Internet users.

Table 2. The frequency of Internet use.

	n	%
Every day or almost every day	3247	59.9%
At least once a week (but not every day)	633	11.7%
Less than once a week	1545	28.5%
Total	5425	100%

The data revealed that the frequency of Internet use is associated with age (F=1770.8[3]; p<0.001). The mean age of daily Internet users is 39.6 years (SD=13.47); whereas the mean age of the ones who use the Internet at least once a week is 48.3 years (SD=13.06); and the mean age of those who use the Internet less than once a week is 64.3 years (SD=13.61). Table 3 provides further details. Frequent Internet use relates strongly to an employment status: 96.6% of students, 83.9% of self-employed, 73.8% of employed, and 66.3% of unemployed use the Internet every day or almost every day. On the other hand two thirds (67.5%) of retired people use the Internet less than once a week. Unmarried individuals use the Internet more frequently than those who are married. High educational level is associated with frequent Internet use as well.

3.2 Problematic Internet Use

PIUQ-6 questions revealed various problems with Internet use (see Figure 1). Over one-tenth of participants reported to spend time online instead of sleeping (7.7% sometimes, 3.7% often, 0.8% always/almost always); and about the same proportion failed in their attempt to decrease the amount of time spent online (7.1% sometimes, 3.3% often, 0.8% always/almost always). About 6% reported that others complained about them spending too much time online (4.4% sometimes, 1.2% often, and 0.3% always/almost always).

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[2] Scoring: 1=never; 2=rarely; 3=sometimes; 4=often; 5=always/almost always.

[3] One – way ANOVA test

Table 3. The frequency of Internet use according to socio-demographic variables.

	How often did you use the Internet in the last 3 months on average?						Total	χ^2 (sig. χ^2)
	Every day or almost every day		At least once a week (but not every day)		Less than once a week			
	n	%	n	%	n	%	N	
Gender								
Male	1690	63.1%	335	12.5%	653	24.4%	2678	43.750
Female	1558	56.7%	297	10.8%	892	32.5%	2747	(p<0.001)
Formal marital status								
Single, has never been married	1412	79.5%	152	8.6%	212	11.9%	1776	908.125
Married (or has a registered homosexual partnership)	1556	54.5%	403	14.1%	897	31.4%	2856	(p<0.001)
Widow, not married again	50	12.1%	26	6.3%	336	81.6%	412	
Divorced, not married again	163	55.6%	38	13.0%	92	31.4%	293	
Employment status								
Employed	1856	73.8%	354	14.1%	306	12.2%	2516	1.850.238
Self-employed	208	83.9%	22	8.9%	18	7.3%	248	(p<0.001)
Unemployed	380	66.3%	70	12.2%	123	21.5%	573	
Student	373	96.6%	13	3.4%	0	0.0%	386	
Retired	335	22.3%	154	10.2%	1016	67.5%	1505	
Unable to work	19	40.4%	7	14.9%	21	44.7%	47	
Housewife	27	31.4%	2	2.0%	57	66.3%	86	
Educational level								
Primary school or less	268	23.3%	103	9.0%	779	67.7%	1150	1.379.089
Secondary school	1864	62.1%	442	14.7%	697	23.2%	3003	(p<0.001)
University degree or higher	1107	88.3%	83	6.6%	64	5.1%	1254	

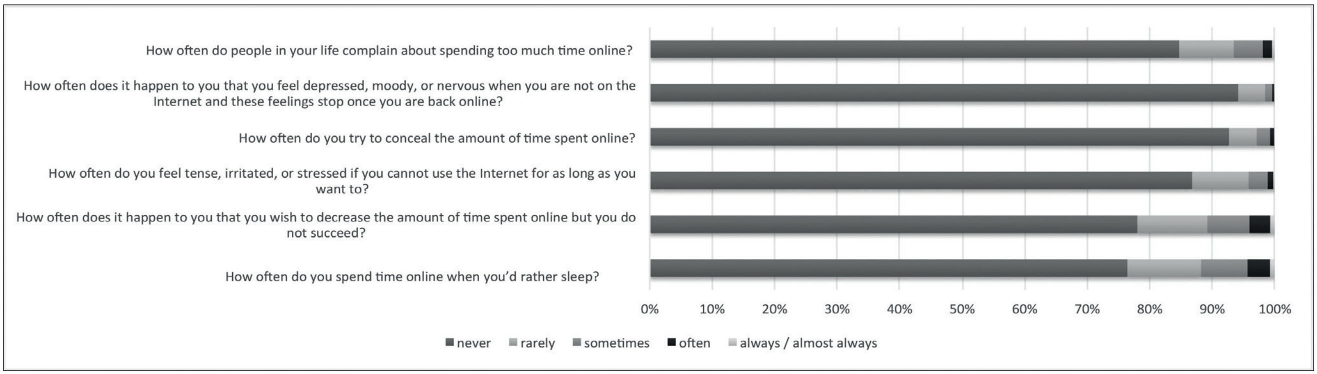

Figure 1. PIUQ-6 items in Slovenian representative sample[4].

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[4] Those who used the Internet less than daily were not offered PIUQ-6 and were considered as non- problematic users. They were added to the answer »never«. Missing values were excluded from calculation.

Individuals were classified as being at risk of problematic Internet use with a score of 15 or more on the PIUQ-6. As it appears in Table 4, 3.1% of the sample, thus of the Slovenian adult population, can be considered to be at risk of problematic Internet use.

Table 4. The prevalence of problematic Internet use.

	n	%
Non-problematic	5187	96.9%
Being at risk of problematic use	165	3.1%
Total	5352	100.0%

Given that Internet use is related to age ($\chi^2=227.472$; $p<0.001$), we present problematic Internet use separately in each age group. According to Figure 2, 14.6% of those aged 18 and 19, 11% of those between 20 and 24 years old and 8.6% of those between 25 and 29 years old are at risk of becoming problematic Internet users. In the age group 30-34, the percentage of those at risk is significantly lower, only 3.5%, whereas it is close to 0% after 65.

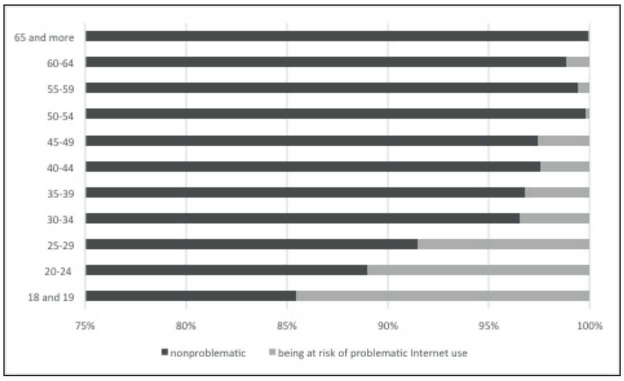

Figure 2. Problematic internet use in different age groups.

Table 5 reveals that being at risk of problematic Internet use is weakly related to gender ($\chi^2=4.72$; $p=0.030$) and to educational level ($\chi^2=22.56$; $p<0.001$). There is a stronger connection to marital ($\chi^2=105.38$; $p<0.001$) and employment status of the respondents ($\chi^2=168.64$; $p<0.001$).

Those at risk of problematic Internet use are more likely to be male (3.6%), single (6.5%) and have higher educational level than non-problematic users. Among different groups, the highest rate of those at risk of problematic Internet use can be found among students (12.0%), followed by those who are unable to work due to disability, illness or age (8.7%), and those unemployed (6.3%). Individuals unable to work comprise a heterogeneous group; age ranges from 19 to 64 years, with a mean age of 45.5 (SD: 11.06), they are mostly male (72.5%) and single (52.8%). These results indicate that problematic Internet use is highly dependent on age, given its high prevalence among students and those unmarried. The mean age of those at risk of problematic Internet use is 31.29 years (SD=11.7, min. 18 years, max. 84 years), whereas the mean age of non-problematic Internet users is 48.25 years (SD=17.2, min. 18 years, max. 95 years) ($t=18.082$; $p<0.001$).

Possible predictors of problematic Internet use were tested with multiple linear regression analysis, where the dependent variable (being at risk of problematic Internet use) was entered as continuous variable calculated from the 6 variables presented on Figure 1. Predictors used in the model were: male gender, the age of the respondent (as numeric variable), living with a partner[5], university degree or more, student status, and unemployment. Results indicated that the model explained 22.8% of the variance of problematic Internet use ($R^2=0.228$; $F(2)=223.37$, $p<0.001$). The stronger predictor of being at risk of problematic Internet use is age (ß=-0.338, $p<0.001$); followed by high educational level (ß=0.145; $p<0.001$) and student status (ß=0.136; $p<0.001$). Thus PIU is more prevalent in the younger generation, non-existent in the older generation and has low prevalence among those who live with their partners.

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[5] “Do you live with your partner?” Measured as 1=“yes, I am married” or “yes, I live with my partner”, and 0=”no”.

Table 5. The prevalence of problematic Internet users according to gender, educational level, marital and employment status.

	Problematic internet use									
	non-problematic				being at risk of problematic use				Total	χ^2 (sig. χ^2)
	n	%	95% CI		n	%	95% CI		N	
Total	5187	96.9%	96.4%	97.3%	165	3.1%	2.7%	3.6%	5352	
Gender										
Male	2541	96.4%	95.6%	97.0%	95	3.6%	3.0%	4.4%	2636	4.719
Female	2646	97.4%	96.8%	98.0%	70	2.6%	2.0%	3.2%	2716	(0.030)
Educational level										
Primary school or less	1130	98.9%	98.1%	99.3%	13	1.1%	0.7%	1.9%	1143	22.558
Secondary school	2860	96.7%	96.0%	97.3%	97	3.3%	2.7%	4.0%	2957	(p<0.001)
University deg. or more	1180	95.5%	94.2%	96.6%	55	4.5%	3.4%	5.8%	1235	
Current formal marital status										
Single, Have never been married	1638	93.5%	92.2%	94.6%	114	6.5%	5.4%	7.8%	1752	105.381
Married (also registered homos. par.)	2770	98.4%	97.8%	98.8%	46	1.6%	1.2%	2.2%	2816	(p<0.001)
Widow(er), not married again	411	100.0%	99.1%	100.0%	0	0.0%	0.0%	0.9%	411	
Divorced, not married again	288	99.0%	97.0%	99.6%	3	1.0%	0.4%	3.0%	291	
Employment status										
Employed	2422	97.6%	96.9%	98.1%	60	2.4%	1.9%	3.1%	2482	168.639
Self-employed	233	96.3%	93.1%	98.0%	9	3.7%	2.0%	6.9%	242	(p<0.001)
Unemployed	531	93.7%	91.3%	95.4%	36	6.3%	4.6%	8.7%	567	
Student	329	88.0%	84.3%	90.9%	45	12.0%	9.1%	15.7%	374	
Retired	1492	99.6%	99.1%	99.8%	6	0.4%	0.2%	0.9%	1498	
Unable to work	42	91.3%	79.7%	96.6%	4	8.7%	3.4%	20.3%	46	
Housewife	84	98.8%	93.6%	99.8%	1	1.2%	0.2%	6.4%	85	

Note: *Wilson Score Interval is used because of the small percentage of those at risk of problematic Internet use.

Table 6. Multiple regression analysis for problematic Internet use.

Model	**Coefficients**[a]	**Unstandardised Coefficients**		**Standardised Coefficients**	**t**	***p***
		B	**Std. Error**	**ß**		
1	(Constant)	9.54	0.16		58.58	<0.001
	Male gender (0,1)	0.27	0.08	0.05	3.41	0.001
	Age	-0.06	0.003	-0.34	-22.02	<0.001
	Living with partner (0,1)	-0.25	0.10	-0.04	-2.58	0.010
	University degree or higher (0,1)	1.13	0.11	0.15	10.77	<0.001
	Student status (0,1)	1.52	0.17	0.14	8.69	<0.001
	Unemployed (0,1)	0.27	0.13	0.03	2.12	0.034

Note: Dependent Variable: Problematic Internet use

4 DISCUSSION

The present study aimed to explore the extent of problematic Internet use in Slovenian adult population. We found that three out of five people (59.9%) use the Internet daily or almost every day. Males, those who are single, students, and those with a university degree are more likely to use the Internet on a daily basis compared to other groups. According to the Problematic Internet Use Questionnaire Short-Form, 3.1% of the sample representing Slovenian adult population are at risk of problematic Internet use. 3.6% of the male population are at risk of problematic use, whereas this proportion is slightly lower for females (2.6%). The mean age of those at risk of problematic use is substantially lower than the mean age of non-problematic users (31.29 years [SD=11.7], and 48.25 years [SD=17.2], respectively). Education level appears to be weakly related to problematic Internet use; those with a higher educational level are more at risk. Among those who are single, the proportion of those at risk of problematic Internet use is much higher (5.4%) than among those who are married (1.2%). Additionally, the proportion of those at risk of problematic Internet use is the highest among students (12.0%), followed by those unable to work (8.7%) and unemployed at the time of data collection (6.3%). Out of all dimensions used to assess problematic Internet use, the most prevalent problem dimension is the 'control' dimension, which is related to the difficulties in controlling one's Internet use. The two items belonging to this factor are: "How often does it happen to you that you wish to decrease the amount of time spent online but you do not succeed?" and "How often do you spend time online when you'd rather sleep?".

These finding are in line with previous findings in the literature. Problematic Internet use appears to be more common among young and unmarried individuals as well as among males (28). A review of previous studies also found higher prevalence of problematic use among males compared to females (16, 24); however, the majority of the studies included in these reviews focused on adolescent rather than adult samples. Interestingly, we found differences in educational levels in terms of Internet use frequency; problematic use of the Internet increases with higher educational level.

Large representative samples are necessary to estimate the prevalence of any phenomena in the general population (29). However, the majority of recent studies reporting prevalence rates in nationally representative samples studied adolescent samples (24). The reported prevalence rates in these studies ranged from 1% in Germany (23) to 18.7% in Taiwan (30). Unfortunately, epidemiological studies exploring problematic Internet use in representative adult populations are lacking in the field (16). A representative survey of German population aged between 14 and 94 years reported 3.5% of Internet users had two or more negative consequences as a result of Internet use (28). Similarly, a survey investigating Hungarian general adult population found that 11% of those who use the Internet regularly (weekly or more often) could be characterised as being at risk of problematic use, which translates to approximately 4.2% of the general population (27). These results are comparable to the findings of the present study, although the studies mentioned earlier (21-23) report considerably lower prevalence rates (i.e., 0.7% and 1%).It is hard to compare the results obtained with different measurement tools; we also assume problematic Internet use nowadays is higher than 5 or 10 years ago, when these studies were made.

The study is not without its limitations. We used a mixed method of interviewing (on-line and personal interview), which may have influenced the findings. However, we believe that a mixed method of interviewing is an added value of the survey, rather than a limitation. By this method, participants had the choice to select the most suitable way of participation, thus increasing the probability of taking part in research. Furthermore, this method reduced social desirability bias as well. Internet survey reached younger population that is less likely to be reached by personal interviews. The self-reported nature of the data is prone to biases, such as memory recall bias. Because of the cross-sectional design of the study, causal relationships between variables cannot be reliably assessed. Furthermore, there exists a risk of over-pathologising Internet use (31). Screening tests alone are unsuitable to establish a valid diagnosis, due to the high rate of false positive cases (32). In the case of disorders with low prevalence rates, screening instruments with sensitivity and specificity around 80% have positive predictive values between 10 and 20%, meaning that only one or two out of ten who screen positive are truly problematic users (32). Therefore, it is important to treat the reported prevalence rates with caution when estimating the scale of the problem. Future studies should assess online activities separately to uncover the nature of problematic Internet use, such as gaming, social networking or using the Internet for work purposes.

5 CONCLUSION

Overall, 3.1% of the Slovenian adults are estimated to be at risk of problematic Internet use. The Internet is an integral part of everyday life, especially for the younger generation. According to our findings, problems related to Internet use are more common among those who are in their twenties or early thirties: 14.6% of 18-19 year-olds, 11% of 20-24 year-olds and 8.6% of 25-29 year-olds are at risk. The percentage of problematic Internet users is significantly lower (3.5%) in the age group from 30 to 34 years, whereas it is close to 0% after 65 years of age. It is paramount, therefore, to provide psychoeducation and other preventive programmes for young adults to reduce or prevent the development of physical and psychological problems, such as loneliness, low self-esteem and social maladaptation.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

All the data analysed in this study were collected at the National Institute of Public Health in the study European Health Interview Survey (EHIS) that is conducted according to the strict methodological guidelines by Eurostat.

The study was conducted in accordance with the code of Ethics of the World Medical Association (Declaration of Helsinki).

REFERENCES

1. The Nielsen Company. State of the media: U.S. digital consumer report. The Nielsen Company, 2012.
2. Dostop do internet: raba interneta v Sloveniji. Available Aug, 2015 from: http://www.ris.org/index.php?fl=2&lact=1&bid=9493&parent=26&p1=276&p2=285&p3=1354&p4=1351&p5=1350&p4=1488&id=1488.
3. Spada MM. An overview of problematic internet use. Addict Behav 2014; 39: 3-6.
4. vanRooij AJ, Prause N. A critical review of “Internet addiction” criteria with suggestions for the future. J Behav Addict 2014; 3: 203-13.
5. Kuss DJ, Shorter GW, van Rooij AJ, Griffiths MD, Schoenmakers TM. Assessing internet addiction using the parsimonious internet addiction components model: a preliminary study. Int J Mental Health Addict 2014; 12: 351-66.
6. Griffiths M. A ‘components’ model of addiction within a biopsychosocial framework. J Substance Use 2005; 10: 191-7.
7. Davis RA. A cognitive-behavioral model of pathological Internet use. Comp Human Behav 2001; 17: 187-95.
8. Young KS. Internet addiction: theemergenceof a newclinicaldisorder. CyberPsychol Behav 1998; 1: 237-44.
9. Tao R, Huang X, Wang J, Zhang H, Zhang Y, Li M. Proposed diagnostic criteria for internet addiction. Addiction 2010; 105: 556-64.
10. Griffiths MD. Does Internet and computer “addiction” exist?: some case study evidence. CyberPsychol Behav 2000; 3: 211–8.
11. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association, 2013.
12. Ang RP, Chong WH, Chye S, Huan VS. Loneliness and generalized problematic Internet use: parents’ perceived knowledge of adolescents’ online activities as a moderator. Comp Human Behav 2012; 28: 1342-7.
13. Cao H, Sun Y, Wan Y, Hao J, Tao F. Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. BMC Public Health 2011; 14: 11.
14. van der Aa N, Overbeek G, Engels RC, Scholte RH, Meerkerk GJ, Van den Eijnden RJ. Daily and compulsive internet use and well-being in adolescence: a diathesis-stress model based on big five personality traits. J Youth Adolesc 2009; 38: 765-76.
15. Wang L, Luo J, Bai Y, Kong J, Gao W, Sun X. Internet addiction of adolescents in China: prevalence, predictors, and association with well-being. Addict Res Theory 2013; 21: 62-9.
16. Kuss DJ, Griffiths MD, Karila L, Billieux J. Internet addiction: a systematic review of epidemiological research for the last decade. Curr Pharm Des 2014; 20: 4026-52.
17. Jeriček H. Zasvojenost z internetom – sedanjost ali prihodnost? Soc Pedag 2001; 3: 144-68.
18. Šimek D. Odvisnost od interneta. In: Rajkovič V, Urbančič T, Bernik M, editors. Vzgoja in izobraževanje v informacijski družbi : zbornik referatov. Ljubljana: Ministrstvo za šolstvo, znanost in šport, 2004.
19. Repa J. Zasvojenost z internetom: diplomska naloga. Ljubljana: Fakulteta za družbene vede, 2008. Available Dec, 2015 from: http://uploadi.www.ris.org/editor/1237374767RepaJasna.pdf.
20. Primožič A. Zasvojenost z internetom: diplomska naloga. Ljubljana: Fakulteta za družbene vede, 2009. Available Dec, 2015 from: http://dk.fdv.uni-lj.si/diplomska/pdfs/primozic-anze.pdf.
21. Bakken IJ, Wenzel HG, Götestam KG, Johansson A, Oren A. Internet addiction among Norwegian adults: a stratified probability sample study. Scand J Psychol 2009; 50: 121–7.
22. Aboujaoude E, Koran LM, Gamel N, Large MD, Serpe RT. Potential markers for problematic Internet use: a telephone survey of 2,513 adults. CNS Spectr 2006; 11: 750–5.
23. Rumpf HJ, Vermulst AA, Bischof A, Kastirke N, Gürtler D, Bischof G. et al. Occurence of Internet addiction in a general population sample: a latent class analysis. Eur Addict Res 2014; 20: 159–66.
24. Pontes H, Kuss DJ, Griffiths MD. Clinical psychology of Internet addiction: a review of its conceptualization, prevalence, neuronal processes, and implications for treatment. Neurosci Neuroecon 2015; 4: 11-23.
25. Demetrovics Z, Király O, Griffiths MD, Farkas J, Kökönyei G, Elekes Z. et al. Psychometric properties of the Problematic Internet Use Questionnaire short-form in a nationally representative sample of adolescents. Manuscript, 2015.
26. Demetrovics Z, Szeredi B, Rózsa S. The three-factor model of internet addiction: the development of the Problematic Internet Use Questionnaire. Behav Res Methods 2008; 40: 563-74.
27. Koronczai B1, Urbán R, Kökönyei G, Paksi B, Papp K, Kun B. et al. Confirmation of the three-factor model of problematic internet use on off-line adolescent and adult samples. Cyberpsychol Behav Soc Netw 2011; 14: 657-64.
28. Beutel ME, Brähler E, Glaesmer H, Kuss DJ, Wölfling K, Müller KW. Regular and problematic leisure-time Internet use in the community: results from a German population-based survey. Cyberpsychol Behav Soc Netw 2011; 14: 291-6.

29. Macur M. Quality in health care: possibilities and limitations of quantitative research instruments among health care users. Quality Quantity 2013; 47: 1703–16.
30. Lin IH, Ko CH, Chang YP, Liu TL, Wang PW, Lin HC. et al. The association between suicidality and internet addiction and activities in Taiwanese adolescents. Compr Psychiatry 2014; 55: 504-10.
31. Billieux J, Schimmenti A, Khazaal Y, Maurage P, Heeren A. Are we overpathologizing everyday life?: a tenable blueprint for behavioral addiction research. J Behav Addict 2015; 4: 119-23.
32. Maraz A, Király O, Demetrovics Z. Commentary on: Are we overpathologizing everyday life?: a tenable blueprint for behavioral addiction research. The diagnostic pitfalls of surveys: if you score positive on a test of addiction, you still have a good chance not to be addicted. J Behav Addict 2015; 4: 151-4.

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PREVALENCE OF VIOLENCE TOWARDS NURSING STAFF IN SLOVENIAN NURSING HOMES

PREVALENCA NASILJA NAD ZAPOSLENIMI V ZDRAVSTVENI NEGI V DOMOVIH STAREJŠIH OBČANOV

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ABSTRACT

Keywords:
workplace violence,
nursing,
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Introduction. The purpose of this research was to identify the prevalence of violence towards nursing staff in Slovenian nursing homes.

Methods. For the purpose of this study, a non-experimental sampling method was employed, using a structured questionnaire as a data collection instrument (n=527). The contents of the questionnaire proved valid and reliable, with a high enough degree of internal consistency (Cronbach Alpha minimum 0.82).

Results. The nursing staffs working in nursing homes for senior citizens are at high risk of violence. In the last year, the employees were most often faced with verbal violence (71.7%), physical violence (63.8%) and sexual violence (35.5%). 35.5% of employees suffered injuries at their working place. During aggressive outbursts of nursing home residents, employees particularly experience vulnerability, fear and insecurity.

Conclusion. There is a need for a comprehensive approach to tackle workplace violence. Some psychiatric health care facilities have already introduced certain measures in this field, and reduction of workplace violence proves that it is possible to reduce aggressive outbursts of patients. After conducting further quantitative research, which would expose detailed characteristics and the background of such violence, it would be sensible to develop similar measures in the field of health care in nursing homes.

IZVLEČEK

Ključne besede:
nasilje na delovnem mestu,
zdravstvena nega,
domovi starejših občanov

Uvod. *Namen raziskave je bil ugotoviti pojavnost nasilja, usmerjenega proti zaposlenim v zdravstveni negi v domovih starejših občanov.*

Metode. *Za to raziskavo smo uporabili neeksperimentalno metodo z anketnim vprašalnikom za zbiranje podatkov (n=527).*

Rezultati. *Raziskava je pokazala, da so zaposleni v zdravstveni negi v domovih za starejše v nevarnosti za nastanek nasilja. V zadnjem letu so se zaposleni največkrat soočili z verbalnim nasiljem (71,7%), fizičnim nasiljem (63,8%), in spolnim nasiljem (35,5%). 35,5% jih je bilo poškodovanih. Med agresivnim izbruhom se zaposleni soočajo z ranljivostjo, strahom in negotovostjo.*

Zaključki. *Raziskava kaže na to, da obstaja potreba po širšem pristopu k obvladovanju nasilja na delovnem mestu. Nekatere psihiatrične ustanove so že uspešno izvedle nekatere ukrepe na tem področju, kar dokazuje zmanjšanje števila agresivnih izbruhov. Po dodatni kvantitativni raziskavi, ki bi razkrila podrobne karakteristike in ozadje tovrstnega nasilja, bi bilo smiselno razviti podobne ukrepe tudi na področju zdravstvene nege v domovih starejših občanov.*

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1 INTRODUCTION

Increased workplace violence towards health care professionals has already been reported [1-3]. Healthcare professionals encounter many medical risks while providing healthcare services to individuals and the community [4]. Healthcare workers (particularly nursing staff) are most frequently the object of psychiatric patients' violent behaviour. However, other employees working with those patients – police officers, security officers, paramedics and nursing home staff – also experience some degree of workplace violence [5]. In total, 35–80% of all healthcare employees experienced at least one physical assault at their workplace; whereby, the nursing staff is the most exposed group of all [5].

6.1 of injuries have been reported per 10,000 of health care employees, while the prevalence among other employees is much lower, 2.1 per 10.000 employees [6]. The reported prevalence of workplace injuries in the field of healthcare is high; however, the actual prevalence of injuries at workplace seems to be even higher, since many incidents remain unreported [6]. Up to 70% of incidents or cases of abuse towards the nursing staff remain unreported [7]. According to the Swedish study, the majority of the respondents (85%) reported to have been exposed to workplace violence at some point in their career, and 57% of respondents reported having been victimized in the past 12 months [8].

In 2013, an extensive study on the prevalence of workplace violence towards employees in psychiatric hospitals, psychiatric homes, nursing homes, and special education, work and care centres (SEWCC) was conducted in Slovenia [9]. Altogether, 92.6% of respondents reported to have experienced aggressive verbal behaviour by their patients in the past 12 months. 84.2% of respondents were physically abused during that period and 63.5% of nursing staff has already suffered injuries, which were inflicted on them by their patients. In the past 12 months, 40.9% of staff were subjects of verbal abuse by patients' family members [9].

There are also few researches that were conducted for nursing homes alone. Aggressive behaviour poses not only a challenge, but also a burden for caregivers working in nursing homes. In the study conducted by Zeller and colleagues, 40% of the staff was exposed to workplace violence during the past year and 18% reported experiencing workplace violence on a daily basis [10]. A significantly higher number of employees working in nursing homes reported violent behaviour compared to employees working in different types of settings [10]. Physical violence was the most frequently (76%) reported type of violence. Helplessness, sadness, anger and feelings of insecurity were feelings most often experienced by staff faced with violent behaviour [11]. Physical aggression was more frequently present in nursing homes (83.9% of employees); whereas, verbal aggression was more common in psychiatric hospitals (96.7% of employees)[12]. In the United States, the highest incidence of workplace assault is observed among nursing assistants working in long-term healthcare settings [13]. 31% of the caregivers (n=120) were subjected to workplace violence in the last year, with physical violence as the most frequent type of violence [14]. All types of caregivers were exposed to workplace violence, and their reactions were commonly very emotional [14]. 34% of nursing assistants included in the study reported to have suffered physical injuries in the past year due to aggressive behaviour of nursing home residents. Nursing assistants employed in nursing homes with Alzheimer's care units were more likely to suffer these types of injuries, including bites [15].

The purpose of this research was to establish the prevalence of violence towards nursing staff in nursing homes in Slovenia.

2 METHODS

The empirical part of the study is based on quantitative, non-experimental research, with a questionnaire being used as the method for gathering data.

2.1 Participants

In Slovenia, 96 public and private nursing homes are operating in 10 geographical regions. A random sample of 3/4 of nursing homes in each region was included in the research. Questionnaires were sent to 72 nursing homes altogether, and each nursing home received 15 questionnaires that were randomly distributed among nursing staff. Questionnaires were randomly distributed among employees who were willing to participate in the study. Each participant could respond only once.

In total, 1,080 questionnaires were distributed to employees, whereas 527 (48.79%) were returned. The total number of respondents included 46 (8.7%) men and 481 (91.3%) women. The average age (±SD) of the respondents was 39.72±10.35. The oldest respondent was 60 years old, and the youngest 19 years old. Levels of education: secondary 441 (83.8%), graduate 71 (13.5%), postgraduate 14 (2.7%).

2.2 Procedures

The survey was conducted in April and May 2015. The participation was voluntary and the participants' anonymity was ensured. When necessary, the administration of the relevant institutions gave their consent to participation in the study. The poll was conducted in accordance with the Code of Ethics for Nurses and Nurse Assistants and the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects.

2.3 Instruments and Data Analysis

The questionnaire was prepared after reviewing the literature on previous studies, different situations faced by employees in the event of outbursts of aggression, and the quality and safety of patient treatment [5, 6, 9, 11, 16, 20].

The questionnaire included 55 questions divided into five sets: (1) work and workplace related workplace violence; (2) work management; (3) the influence of different factors on patient safety and quality of patient care; (4) education and (5) demographics.

For research purposes, the questionnaire included “Risk management” as the dependent variable, whereas, the independent variables included the following: “the availability of supplies, a clear understanding of risks involved, the awareness about work-related errors, attention to measures for increased safety, attention to the importance of safety within the institution, handling violent outbursts, supervision, motivation and incentives for the personnel, sufficient number of employees, protocols in case of violent outbursts, reporting about unfortunate events, team work and support, measures for improvement”.

A descriptive Likert scale was used (1 – strongly disagree; 2 – disagree; 3 – partly agree; 4 – agree; 5 – strongly agree). While developing the questionnaire, a focus group of post graduate nursing students (2nd cycle) was formed, whose remarks and suggestions were added into the questionnaire.

The data were analysed with descriptive statistics, correlation, the Kolmogorov-Smirnov test, Mann-Whitney U test and linear regression. The data were processed with the statistics program IBM SPSS v. 21.0 and IBM AMOS v. 21 with a $p<0.05$ level of significance. Compiled data were processed by means of descriptive statistics, correlation analysis, Kolmogorov-Smirnov test and Mann-Whitney U test and regression analysis.

The contents of the questionnaire proved valid and reliable, with a high enough degree [19, 21] of internal consistency (Cronbach Alpha minimum 0.82). The external validity of the questionnaire was evaluated through a focus group, prior to the data acquisition.

3 RESULTS

The percentage, types and frequency of workplace violence directed towards nursing staff working in nursing homes are shown in Table 1.

Table 1. Work and workplace violence (n=527) - the results of the study on violence of patients towards staff in Slovenian nursing homes in 2015.

Have you been exposed to verbal abuse by patients at your workplace in the last year?	**YES = 378**	**71.7%**
	If so, how often?	
	1-2x	170
	3-5x	136
	6-9x	18
	10x<	54
Have you been exposed to verbal abuse by co-workers or superiors at your workplace during the last	**YES = 74**	**14%**
	If so, how often?	
	1-2x	30
	3-5x	30
	6-9x	9
	10x<	6
Have you been exposed to sexual harassment by patients at your workplace during the last year?	**YES = 186**	**35.5%**
	If so, how often?	
	1-2x	154
	3-5x	22
	6-9x	8
	10x<	5
Have you been exposed to sexual harassment by co-workers or superiors at your workplace during the last	**YES = 5**	**0.9%**
	If so, how often?	
	1-2x	4
	3-5x	0
	6-9x	1
	10x<	0
Have you been exposed to physical violence by patients at your workplace during the last year?	**YES = 336**	**63.8%**
	If so, how often?	
	1-2x	148
	3-5x	110
	6-9x	21
	10x<	22
Have you been exposed to physical violence by co-workers or superiors at your workplace during the last year?	**YES = 5**	**0.9%**
	If so, how often?	
	1-2x	2
	3-5x	2
	6-9x	1
	10x<	0
Have you ever been injured by a patient at your workplace?	**YES = 194**	**36.8%**
	If so, how often?	
	1-2x	171
	3-5x	21
	6-9x	1
	10x<	2

71.1% respondents reported having experienced verbal violence by their patients in the last year. 63.8% respondents reported having been physically abused in the last year, and 36.8% of all employees suffered injuries that were inflicted on them by their patients. 35.5% of respondents reported having been sexually harassed by their patients in the last year. One of 14 employees was subjected to verbal abuse by their superiors or colleagues. Emotions and conditions, which are experienced by employees during patients' aggressive behaviour, are summarised in Table 2.

Table 2. Employees dealing with certain emotions and states - the results of the study on workplace violence of patients towards staff in Slovenian nursing homes in 2015.

Claim	N	Min intensity	Max intensity	Mean intensity	Std. dev
Fear	520	1	5	3.50	1.29
Insecurity	515	1	5	3.41	1.13
Helplessness	514	1	5	3.33	1.19
Lack of training	511	1	5	2.95	1.34
Anger	513	1	5	1.92	1.01
Despair	511	1	5	3.16	1.46
Vulnerability	516	1	5	3.52	1.29
Lack of empathy by co-workers	513	1	5	1.93	.99
Lack of empathy by superiors	514	1	5	3.12	1.11

When faced with patients' aggressive behaviour, employees had most intensive feelings of vulnerability (M±SD=3.52±1.29), fear (M±SD=3.5±1.29) and insecurity (M±SD=3.41±1.13). Less intensively felt were anger towards the patient (M±SD=1.92±1.01) and lack of empathy by co-workers (M±SD=1.93±0.99).

Furthermore, a correlation analysis for different types of workplace violence reported by the study participants was performed. A significant correlation was found between the following variables: verbal abuse by patients in the past year and physical violence by patients in the past year (r=0.701; p<0.01); verbal abuse by patients in the past year and workplace injury (r=0.401; p<0.01) (Figure 1).

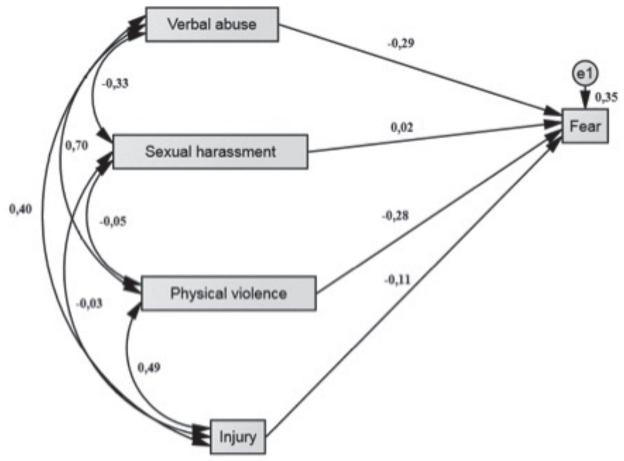

Figure 1. The correlation between individual variables defined in the study on workplace violence of patients towards staff in Slovenian nursing homes in 2015.

Variables of "verbal abuse", "physical violence" and "injury" explain 35% of variance for "fear". "Verbal abuse" and "physical violence" are significant predictor variables (Figure 1).

We stated different measures used by organisations to ensure safety during patients' aggressive outbursts, as well as the influence of other factors.

The respondents most favourably evaluated the following statements: "Only a sufficient number of employees can ensure a 24-hour monitoring and detection of potential risks (M±SD=4.3±0.96)" and "Conflicts among team members can affect the safety and quality of patient care (M±SD=4.5±1.01)". The following statement was the least favourably evaluated: "I receive sufficient motivation and incentives to perform my work in a quality and safe manner (M±SD=2.11±1.11)".

We were interested in the employees' opinions about their own knowledge and education on aggression management. The employees neither agreed nor disagreed that their knowledge on patient aggression management was sufficient (M±SD=2.79±1.00), whereas they placed most emphasis to multiple revision workshops (M±SD=4.23±0.79) and practical workshops (M±SD=4.2±0.80), as well as written guidelines (M±SD=4.16±0.82).

Our research shows statistically significant differences in experiencing fear among the employees, who were subjected to physical abuse and also verbal abuse by their patients in the past year at their workplace. Employees who had already been a target of physical violence more often believed that they possessed insufficient knowledge to manage an aggressive patient.

4 DISCUSSION

The aim of this research was to identify the frequency and intensity of workplace violence towards the nursing staff. For the purposes of this research, a non-experimental quantitative method with a structured questionnaire was used for data collection. The method proved to be appropriate and the aim was achieved.

The nursing staffs in nursing homes for senior citizens are at high risk of violence. During aggressive outbursts of nursing home residents, employees particularly experience vulnerability, fear and insecurity.

According to our research, 71.1% of respondents reported having experienced verbal violence by their patients in the last year. 63.8% of respondents reported having been physically abused in the last year, and 36.8% of all employees suffered injuries that were inflicted on them by their patients (Table 1). In addition, 35.5% respondents reported having been sexually harassed by their patients in the last year (Table 1).

Compared to other research conducted in nursing homes, different levels of physical violence were reported: 76% [11], 31% [14] and 83% [12]. The proportion of those exposed to workplace violence by psychiatric patients is slightly higher: 85% [8], 70% [7]. The research conducted in general hospitals shows that, in the past 12 months, 72% of nursing staff experienced verbal violence, whereas 42% of nursing staff experienced physical violence from both patients and visitors [16]. The nursing staff experienced a lot of distress due to violent behaviour by both patients and visitors [16].

A statistically significant correlation was established between verbal and physical violence, as well as verbal violence and workplace injuries (Figure 1). This has already been established in the research entitled “Different types of violent behaviour are not independent from each other, but are interconnected in a way that the presence of one type of violent behaviour (e.g. verbal abuse) may trigger the occurrence of another (e.g. sexual harassment) [9].
In 2003, an extensive research on violence towards psychiatric health care employees was conducted by using the same research methodology [9]. It was established that the prevalence of verbal and physical violence in the psychiatric health care facilities is 20% higher compared to nursing homes, which is nevertheless a cause of concern. Verbal violence (92.6% – psychiatric health care; 71.7% - nursing home health care) and physical violence (84.2% – psychiatric health care; 63.8% - nursing home health care). The research conducted in nursing homes showed a higher proportion of sexual violence; 35.5% of employees in nursing home health care and 24.6% in psychiatric health care. This high proportion is also reflected in the employee structure (nursing homes: 91.3% of women; psychiatric health care facilities: 53.2%).

The results of the study can serve as the basis for the development of a comprehensive prevention of aggression and employee training programme, which is adjusted for nursing home settings (nursing homes, long-term care, etc.), as suggested and implemented in psychiatric health care facilities, where preliminary results of the comprehensive management model show a high performance level [17].

The institution can influence the establishment of safety culture within the organisation by creating systematic training models, taking necessary precautions to ensure safety and preparing a protocol used in the event of violent outbursts [18].

This study is subject to limitations. First, due to the selected sampling technique. Second, another common limitation, as with most studies on a similar topic, is the reliance on self-reports.

5 CONCLUSIONS

The results of this study are in agreement with other studies that show the exposure of nursing staff towards workplace violence. The research enlightens the area of violence towards the employees in health care in nursing homes, which has been rarely researched up until now.

According to frequent and intensive workplace violence incidences, the employees need a comprehensive approach to tackle any form of workplace violence towards nursing staff. Such an approach has already been adopted by some psychiatric health care facilities in order to ensure safe and high-quality management of residents’ aggressive outbursts. To get a comprehensive picture on workplace violence in health care facilities, the research should be extended to somatic branches of healthcare.

In order to determine the range of problems, it would be useful to conduct a survey with the same methodology on other aspects of healthcare, as well as an intensified study with qualitative methodology, which would expose the characteristics and background manifestation of such violence.

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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 conducted in accordance with the Code of Ethics for Nurses and Nurse Assistants and the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects.

REFERENCES

1. Jones MK. Patient violence. J Psychosoc Nurs 1985; 23: 12-7.
2. Alessi CA. Managing the behavioural problems of dementia in the home. Clin Geriatr Med 1991; 7: 787-801.
3. Gates DM, Fitzwater E, Meyer U. Violence against caregivers in nursing homes: expected, tolerated, and accepted. J Gorontol Nurs 1999; 25: 12-22.
4. Ozturk, H, Babacan E. The occupational safety of health professionals working at community and family health centers. Iran Red Crescent Me 2014; 16.
5. Clements PT, DeRanieri JT, Clark K, Manno MS, Kuhn DW. Workplace violence and corporate policy for health care settings. Nurs Econ 2005; 23: 119-24.
6. Gates DM, Gillespie GL, Succop P. Violence against nurses and its impact on stress and productivity. Nurs Econ 2011; 29: 59-67.
7. Stokowski LA. Violence: not in my job description. Workplace violence in healthcare settings. Available Jun 5, 2014 from: http://www.medscape.com/viewarticle/727144; 2010.
8. Soares JJF, Lawoko S, Nolan P. The nature, extent and determinants of violence against psychiatric personnel. Work Stress 2000; 14: 105-20.
9. Gabrovec B, Eržen I, Lobnikar, B. The prevalence and the nature of violence directed at the medical staff in psychiatric health care in Slovenia. HealthMED 2014; 8: 228-34.
10. Zeller A, Hahn S, Needham I, Kok G, Dassen T, Halfens RJ. Aggressive behaviour of nursing home residents toward caregivers: a systematic literature review. Geriatr Nurs 2009; 30: 174-87.
11. Astrom S, Bucht G, Eisemann M, et al. Incidence of violence towards staff caring for the elderly. Scand J Caring Sci 2002; 16: 66-72.
12. Franz S, Zeh A, Schablon A, Kuhnert S, Nienhaus A. Agression and violence against health care workers in Germany – a cross sectional retrospective survey. BMC Health Serv Res 2010; 10: 51.
13. Gates D, Fitzwater E, Succop P. Reducing assaults against nursing home caregivers. Nurs Res 2005; 54: 119-27.
14. Lundstrom M, Saveman BI, Eisemann M, Aström S. Prevalence of violence and its relation to caregivers demographics and emotional reactions – an explorative study of caregivers working in group homes for persons with learning disabilities. Scand J Caring Sci 2007; 21: 84-90.
15. Tak S, Sweeney MH, Alterman T, Baron S, Calvert GM. Workplace assaults on nursing assistants in US nursing homes: a multilevel analysis. Am J Public Health 2007; 100: 1938-45.
16. Hahn S, Muller M, Needham I, Dassen T, Kok G, Halfens RJ. Factors associated with patient and visitors violence experienced by nurses in general hospitals in Switzerland: a cross-sectional survey. J Clin Nurs 2010; 19: 3535-46.
17. Gabrovec B, Lobnikar B. Organizational model of ensuring safety and quality of treatment of agresive psychiatric patients in psychiatric health care in Slovenia. Slov Nurs Rev 2014; 48: 286-93.
18. Gabrovec B, Lobnikar B. The analysis of the role of an institution in providing safety and quality in psychiatric health care. Anadolu Psikiyatr De 2015; 16: 420-5.
19. Cencič M. Kako poteka pedagoško raziskovanje: primer kvantitativne empirične neeksperimentalne raziskave. Ljubljana: Zavod Republike Slovenije za šolstvo, 2009.
20. Gabrovec B. The prevalence of violence directed at paramedic services personnel. Slov Nurs Rev 2015; 49: 286-94.
21. Ferligoj A, Doreian P, Batagelj V. Positions and roles. In: Scott J, Carrington PJ, editors. The SAGE handbook of social network analysis. Los Angeles: SAGE, 2011.

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PRIMARY CARE FOR THE ROMA IN EUROPE: POSITION PAPER OF THE EUROPEAN FORUM FOR PRIMARY CARE

OSNOVNO ZDRAVSTVENO VARSTVO ZA ROMSKO PREBIVALSTVO V EVROPI: AKTUALNO STALIŠČE EVROPSKEGA FORUMA O OSNOVNEM ZDRAVSTVENEM VARSTVU

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ABSTRACT

Keywords:
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Roma populations' low health status and limited access to health services, including primary care, has been documented in many European countries, and warrants specific health policies and practices.
A variety of experiences shows how primary care can adjust its practices to reduce the barriers to primary care for Roma populations.
At local level, establishing collaboration with Roma organisations helps primary care to improve mutual relations and quality of care. Mediation has proved to be an effective tool.
Skills training of primary care practitioners may enhance their individual competences.
Research and international sharing of experiences are further tools to improve primary care for the Roma people.

IZVLEČEK

Ključne besede:
osnovno zdravstveno varstvo, Romi, romski zdravstveni posredniki

Slabo zdravstveno stanje romskega prebivalstva ter omejen dostop do zdravstvenih storitev, kar vključuje tudi osnovno zdravstveno stanje, je zabeleženo v več evropskih državah in potrjuje določena zdravstvena načela in dejavnosti.
Različne izkušnje prikazujejo načine, kako se lahko osnovno zdravstveno varstvo prilagodi dejavnostim za zmanjšanje ovir med osnovnim zdravstvenim varstvom in romskim prebiovalstvom.
Vzpostavljanje sodelovanja z romskimi organizacijami na lokalni ravni lahko pripromore k skupnim povezavam in kakovostni oskrbi na področju osnovnega zdravstvenega varstva. Posredovanje se je izkazalo za učinkovito orodje.
Usposabljanje izvajalcev osnovnega zdravstvenega varstva lahko izboljša zmožnosti posameznika.
Orodja za izboljšanje osnovnega zdravstvenega varstva za romsko prebivalstvo so nadaljnje raziskave in primerjanje izkušenj na mednarodni ravni.

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1 INTRODUCTION

The 12 million Roma population in Europe constitutes its largest ethnic minority (1). A history of migration and exclusion in ancient and recent times has led to their dispersion over many countries and a wide variety of identities and characteristics. Many Roma people are a part of mainstream society with a health status that is comparable to that of the general population but, in contrast to the general population, low levels of education and illiteracy, low employment and a low income level are also frequent features of many Roma communities. This has resulted in a particularly low health status and high incidence and prevalence of a number of diseases among the Roma population (1-3).

This position paper is exploratory in character. Selected experts and practitioners contributed to it. The procedure to collect information on what was actually happening on the primary care level was through workshops at various conferences in Barcelona, Vienna and Istanbul. During workshops, drafts of the paper were discussed, which led to content additions and revisions. Representatives from Slovenia, Bulgaria and Belgium have presented several research projects and examples of good practices in the field of health care of the Roma. Experts received comments from the National Roma Agencies as well. In addition, authors did a PubMed survey to have relevant background information; The European Forum for Primary Care's Executive Committee endorsed the final version in accordance with its procedures.

The key objective of this paper is to assist practitioners, policymakers and researchers in Primary Care (PC), by providing information on health needs of the Roma people and on the research, policies and practices that intend to overcome the barriers to the delivery of effective Primary Care to the Roma.

This paper describes specific needs of the Roma and the barriers to good PC for them. It discusses the current context in which health care for the Roma population functions, and shows various approaches in the policy, practice and research intended to improve PC for Roma communities. A number of suggestions are offered to strengthen the skills of practitioners.

2 THE ROMA POPULATION

This paper makes generalisations about the Roma population. Yet, in no way do we intend to stigmatise the Roma and Roma communities in this paper. Further, some of the generalisations below also apply to other population groups, among them recent migrants from other continents.

The largest Roma populations are to be found in the Central and Eastern European states, such as Bulgaria, the Former Yugoslav Republic of Macedonia, Slovakia, Romania, Serbia and Hungary. In these countries, the Roma people make up between 7 and 12 per cent of the total population. In most other states, the Roma make up around one per cent, or much less, of the population (4).

2.1 Health Status

In line with the low socio-economic status of Roma communities, many health indicators are unfavourable for the Roma. Specific patterns of morbidity and mortality in Roma communities obviously vary with the composition and location of the community and with the precise socio-economic characteristics. A recent EU report, reviewing health status of Roma communities, highlights a higher incidence of major chronic diseases in the Roma community compared to the general population (4). As it could be expected, a frequently high TB prevalence is a major issue, in addition to sexual and reproductive health, including the early age at first pregnancy, abortion rate and unmet contraceptive needs. Indeed, Roma women are generally in worse health and more disadvantaged than Roma men and non-Roma people. Poor maternal health is a particular risk for Roma women.

As a consequence of isolation across generations, in some Roma communities in Eastern Europe, hereditary diseases are highly prevalent; several of them are unique to the Roma: hereditary motor sensory neuropathy type Lom, congenital myasthenic syndrome and several others. Other disorders, like G6PD deficiency, are not specific for the Roma, but in certain sub-groups they are highly prevalent (5). Due to the migration in recent years, families and individuals with these traits are now living in other regions of the world as well.

2.2 Access to Health Care

Various barriers limit the Roma people to access the health care system. Supply side and demand side barriers have been described in a number of reports and publications (6-8). The examples below illustrate the most common barriers. A major supply side barrier is a large distance to health services, including PC, for Roma communities. This influences the access to services because transport time and costs are prohibitive.

Affordability refers to the costs and prices of services. In view of the low economic status of many Roma people, this is an obvious supply side barrier. Health insurance takes this barrier largely away. However, the Roma are significantly less likely to have insurance coverage in countries of Central and Eastern Europe, except in Slovakia and Serbia, and this gap remains when adjusting for socio-economic differences between the Roma and non-Roma populations (9).The reasons include the lack of identity papers, non-qualification for health insurance because of income or employment status, or lack of knowledge as how to access health insurance. Thanks to dedicated efforts over the last decade, in several countries the proportion of the Roma that has no identity papers or health insurance has declined drastically. Still, as late as in 2012, up to 26% of the Roma in Romania did not possess health insurance, and currently the numbers of non-insured Roma people in Bulgaria are increasing (10). In emergency situations, people do have the right to access health services without health insurance, but family planning and antenatal care are not included in the medical package for the uninsured in several countries. This results in low accessibility of antenatal care and a higher risk of complications during pregnancy, as well as high rates of low birth weight (4, 11, 12).

Acceptability is a supply side barrier when health staff attitudes express lack of respect or empathy. An overwhelming amount of personal accounts of Roma patients point at a condescending or hostile attitude of their primary care provider(s). Prejudice and lack of trust easily become reciprocal and are often fed by the Roma's distrust in public services (13-16). Fortunately, also the contrary has been documented: primary care providers committed to their Roma patients without hesitation.

On the demand side, several factors play into the actual use of health services. Language and literacy are among them. Nearly 40% of the Roma speak one of the Romani dialects. The proportion that does not speak a second language is unknown. Language barriers are responsible for misunderstandings, having a negative impact on health and health care, such as non-compliance with a prescribed treatment or late admission.

Many Roma people regard health care institutions as distressing places. They are alien spaces in which everything is different and where the established norms are, not only strange, but in many cases, at variance with their own (17). Related to (health) literacy is a frequent lack of Roma people's knowledge about the organisation of the health care system. For instance, the gatekeeping role of primary care often is not known. Opening hours of health centres or of a GP's surgery, and the purpose of diagnostic and therapeutic procedures are not understood or accepted. The purpose and timing of childhood immunisation is often not known.

Health seeking behaviour is also influenced by concepts of health and disease. Following from the large diversity of Roma communities and subcultures, there is no single, well defined set of concepts, beliefs and attitudes of the Roma towards health, health behaviour and disease. However, some values, like notions of purity and impurity, are widespread among the Roma, and may explain the avoidance of contact with particular materials or individuals.

The place where we grew up shapes the way we think, feel, and act. Hofstede's theory of cultural dimensions describes the effects of a society's culture on the values of its members, and how these values relate to behaviour (18). Collectivism versus individualism is one of the dimensions Hofstede has identified in which Roma differ from most of the surrounding populations: the group you belong to is more important than yourself. Individuals feel complete only within a group of peers. Family is playing a major role in decision making; an individual patient's responsibility is limited. This explains the strong wish of Roma patients to be accompanied by members of the group during consultation and hospitalisation. This easily leads to controversy with staff and other patients, when these feel overwhelmed and do not understand the importance of the group being together.

2.3 The Current Policy Context Concerning the Roma People

Of relevance for the delivery of primary care to the Roma people are the current local, national and international policy initiatives that attempt to break the social barriers and widespread discrimination of the Roma. The main international initiatives are briefly reviewed below.

One of the main initiatives is the "Decade of Roma inclusion 2005-2015". Currently, 13 countries in the Central and Eastern Europe participate as members or observers, plus Spain, Norway and the United States. Four priority areas have been defined, namely: housing, education, employment and health (36). While some successes can be claimed, in early 2014, the members of the Roma decade concluded that the ultimate aims by far had not been achieved and that the Decade needs to be followed up by similar actions (19).

The EU Fundamental Rights Agency was established in 2007 as an agency with the specific task of providing independent, evidence-based advice on fundamental rights. It is EU's channel for many of its Roma policies. The "EU Framework for National Roma Integration Strategies up to 2020" has been established in 2011, which focuses on the same four priorities as the Roma Decade. Member states have to develop a National Roma Integration Strategy, and the European Commission provides an annual report to the European Parliament on the progress made regarding Roma integration (20).

The Council of Europe adds its voice and moral as well as practical guidance through another four distinct approaches, namely: (1) Effective monitoring and evaluation of the implementation of national strategies for Roma; (2) From targeting to mainstreaming policies for Roma; (3) Ensure Roma and Travellers participation in the political process; (4) Strengthen co-operation between all stakeholders (21).

The Regional Office for Europe of the WHO supported the development of the WHO Collaborating Centre on Social Inclusion and Health in Alicante, Spain. The Centre runs a programme dedicated to the health of the Roma. It publishes a quarterly electronic "Roma health newsletter" and supports initiatives, like a symposium in Hungary on healthy ageing of the Roma in late 2014 (22).

All the above initiatives emphasise the importance of the collection and use of specific data on Roma health, and of the participation of the Roma in defining, implementing and monitoring the policies that aim to help the Roma people to integrate and eliminate exclusion.

3 PRIMARY CARE DELIVERY: ESTABLISHING AN EFFECTIVE RELATIONSHIP WITH ROMA COMMUNITIES AND PATIENTS

The concept of PC includes the notion that it adequately addresses the needs of all patients for which it is responsible, irrespective of age, gender, creed and ethnic background (23).

From the above follows that strong PC adjusts the expertise, skills and organisation of its providers to the sub-groups in the population. Therefore, we consider that PC is universal. PC for the Roma is no different from other PC, but it adapts to specific Roma population characteristics. Because of the variation in Roma communities, this adjustment needs to be done at the local or regional level. At the national and international level, measures can be taken to facilitate this local or regional adjustment.

3.1 Generic Competences

Effective communication between health care providers and patients is of key importance. Primary care providers have to be competent communicators. Effective communication skills come with knowledge and genuine motivation (24).

As described above, collectivity is a very important dimension of Roma culture. The Roma people often come in groups to emergency services or primary care consultations, which is an expression of group solidarity. The acceptance of this culture and behaviour reflects competences of health care providers. Making practical arrangements, like creating the necessary space in waiting rooms or consultation rooms when that is possible, is part of the acceptance.

3.2 Specific Competences

Language is often one of the obstacles that need to be overcome. The practice of involving family members to translate between patient and care provider has several negative effects, and guidelines have been developed to support the practice of translation. The current European RESTORE project aims to investigate the implementation of guidelines and training initiatives that support communication in cross-cultural general practice consultations. In several countries, a telephone Romani translation service is available (25).

Local or regional Roma organisations can be effective partners to establish such relationships. In Romania, a guide for General Practitioners on Roma culture was developed through an intensive consultative process between health providers and the Roma community (26). In Spain, a handbook for health providers was developed as well (27). Local studies on Roma health status, lifestyle and health (seeking) behaviour may have the double benefit of establishing relationships through the studies and of providing knowledge to primary care practitioners. Below, several examples of local, regional and national initiatives are given.

In 2013, a cervix cancer screening programme among Roma women in Oradea, Romania, gradually gained more acceptance. GPs took the responsibility for the programme and careful explanations to both the male and female population; the acceptance of the programme was ensured with the help of a Roma Health Mediator (see below). Practical obstacles, like distance and travel expenses, however, were difficult to overcome. Yet, when the funding dried up after one year, the service stopped running. This affected trust, since earlier promises to the Roma target group could not be kept. The lesson learned here is that we need continuity in (funding) policies and services.

3.3 Research and Dissemination

In a number of countries, GPs and local health services conduct research. A major point to emphasize is a close collaboration between the academia, local primary care providers and Roma organisations, which help to implement the research and may by itself contribute to trust-building. In addition, researchers may reach out to their professional peers and demonstrate as well as advocate Roma oriented research.

3.4 Slovenia

The Universities of Ljubljana and Maribor have undertaken a research programme, three outcomes of which are highlighted below. A study on smoking and smoking behaviour among the Roma showed a strong cultural dimension of smoking. Traditional strategies for smoking cessation are largely ineffective among the Roma. Therefore, innovative and culturally acceptable methods need to be developed (28). The "Health beliefs and practices among Slovenian Roma in response to febrile illnesses" study concludes that Roma generally do not use a thermometer, but instead define health or illness according to their general wellbeing (29). The Roma frequently use traditional folk medicine (teas, compresses) to treat fever. They only see a doctor if their health problems last more than 3 days. This knowledge helps GPs in advising their Roma patients. In Goričko region, the University of Maribor supports local primary care by helping to organise education workshops for groups of Roma patients. Topics are asthma, blood pressure, diabetes mellitus and emergency.

In 2012, a new edition of the textbook on Family Medicine included a chapter on anthropology, and in 2014, a module was added to the 3-year training of GPs, which provides GPs with information on the specificity of the Roma population, their usual way of visiting primary care doctors, and recommendations on how family doctors should communicate with Roma patients.

3.5 Belgium

In Ghent, with a population of 5000 Roma, a group of primary health care centres has been strongly oriented towards community care for many years. In 2014, the city of Ghent, in collaboration with Ghent University, conducted research on the experiences of the Roma population with regard to (the access to) healthcare. The main objectives were: (1) to gain insight into the barriers that are experienced by the Roma-population; (2) to explore how the Roma experience their health; (3) to identify the factors which contribute to mutual relations of trust and respect between patients and healthcare providers. Results indicate that the Roma population in Ghent is encountering similar barriers as the Roma in other European countries. The most prominent barrier is finances. As in other countries, the Roma often have trouble to pay for health services. Language and transport also seem to be important barriers. In addition to these more practical aspects, the Roma also tend to foster distrust towards the mainstream society. In order to establish a relationship of trust between the Roma and health care providers, some specific measures can be taken, like translating services. Longer consultation times are also mentioned as being important. Lastly, the collaboration between health care providers and health care and welfare professionals, as well as the centralisation of care mean that patients can rely on one or two providers that are familiar with their background and situation, instead of having many different professionals with whom they have not established personal relationships (30).

3.6 Bulgaria

During the 1990s, alerted by the diseases of a number of their Roma patients, neurologists from the Sofia University Hospital explored the prevalence and clinical manifestations of a range of neuro-muscular conditions among the Roma in almost all Roma communities in the country. Through many visits over the years, they identified a number of rare hereditary neuro-muscular diseases, some of which had not been described before in other population groups. By quietly and respectfully explaining the symptoms and heredity, they succeeded in gaining the trust of the Roma communities, in spite of the sensitivity of the subject. Gradually, the visits developed into counselling sessions, whereby couples could discuss family planning and risk of hereditary diseases among their offspring. The good practice here is to gradually develop a relationship of trust. This practice does not originate in primary care, but rather serves to inspire primary care practitioners.

3.7 Multi-country Study

The European Centre for Disease Prevention and Control studied how the uptake of vaccinations can be improved. It concluded that one of the top interventions is to invest in education for physicians and nurses to communicate more efficiently and emphatically. It has published short guides for health staff in various languages (Let's talk about protection) (31).

3.8 Mediation between Primary Care and Roma Communities and Patients

In several countries, there have been positive experiences with the Roma Health Mediator (RHM): a person from a Roma community, mostly female, who is trained to liaise and create an understanding between the Roma and (primary) health care services. The report, "Roma Health Mediators, successes and challenges", reviews the experiences (32). Official RHM job descriptions vary little by country, although the actual work may vary.

In general, for the RHM, training curriculum, certification and conditions of work have gradually been optimized, supported by international studies and exchanges. The funding for this group of workers remains a challenge, since they are between the health system and community, and the final responsibility for their functioning and employment varies between and within countries. In Romania, the RHM was initially employed by an NGO and the Ministry of Health, but currently the municipalities are taking over the responsibility for their employment, emphasising that the RHM is not a health professional, but a member of a Roma community. After more than 10 years of experience with the RHM, a number of lessons learned are worthwhile to quote:

Mediators can be ineffectual if health professionals have an unclear understanding of the mediator's functions, and when they are:

- delegating all the weight of the intervention to the mediator,
- delegating all activities that healthcare professionals dislike, i.e. community interventions, to the mediator,
- using the mediator's service exclusively in situations of conflict.

Therefore, a number of prerequisites should inform the actions of mediators, namely:

- a clear definition of their role and functions;
- an adequate training;
- a coordination of their work with healthcare professionals.

In no country the number of RHMs is sufficient yet to cover at least all larger Roma communities.

4 PERSPECTIVES AND RECOMMENDATIONS FOR THE POLICY AND PRACTICE ON LOCAL, NATIONAL AND EUROPEAN LEVELS

Local primary care organisations and staff are encouraged to establish long-term cooperation with local Roma organisations because it shows, time and again, that a mutually beneficial relationship can be developed. Ultimately, this helps to improve the access to care and the quality of care for the Roma population.

Programmes and projects oriented towards improving Primary Care for the Roma, like, for example, training programmes for primary care providers and screening programmes, need time to be prepared, implemented and institutionalised, also in the financial sense. Therefore, funding should be long-term and not limited to a short-term action.

One main recommendation resulting from many reviews and analyses is to sustain and expand the funding for the RHM.

Communication skills, in general, and knowledge about Roma health and culture should be built in the training curriculum and Continuous Medical Education of Primary Care providers in settings with a high proportion of Roma population.

International organisations, like the European Forum for Primary Care and the European Public Health Association, may continue to organise meetings and workshops on Roma health. In several countries, the size of the Roma population is small, and it may be difficult to offer Roma-specific information and training to health professionals. They would benefit, in particular, from these international opportunities to advance their knowledge and skills.

The unavailability of the data on health of the Roma population in most countries has led to suggestions in the last years to start a collection of health data based on ethnicity. With safeguards on the use of data and a climate of trust, the fear of stigmatisation may diminish. National legislations and regulations, including the creation of ethical committees to assess research plans, are required to establish research activities that are unchallenged and productive.

Amongst others, research should collect information on cultural and other characteristics of local Roma communities and include a process of establishing a stable relationship between the researchers and the population to be studied. Since the research necessarily takes place at the local level and on the small scale, primary care practitioners need to be actively involved, if not themselves leading the research.

CONFLICTS OF INTEREST

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REFERENCES

1. European Union Agency for Fundamental Rights. The situation of Roma in 11 EU Member States: survey results at a glance, 2012. Available March 30, 2016 from: http://fra.europa.eu/sites/default/files/fra_uploads/2099-FRA-2012-Roma-at-a-glance_EN.pdf.
2. European Roma Rights Centre. Hidden health crisis: a report by the European Roma Rights Centre: health inequalities and disaggregated data, 2013. Available March 30, 2016 from: http://www.errc.org/cms/upload/file/hidden-health-crisis-31-october-2013.pdf.
3. Krumova T, Ilieva M. The health status of Romani women in Bulgaria. Veliko Turnovo: Center for Interethnic Dialogue and Tolerance "Amalipe", 2008.
4. European Commission. Roma health report: health status of the Roma population: data collection in the Member States of the European Union, 2014. Available March 30, 2016 from: http://ec.europa.eu/health/social_determinants/docs/2014_roma_health_report_en.pdf.
5. Kalaydjievaa L, Lochmüller H, et al. Workshop report: 125th ENMC International Workshop: neuromuscular disorders in the Roma (Gypsy) population. Neuromuscul Disord 2005; 15: 65-71.

6. Jacobs B, Ir P, Bigdeli M, Annear P, van Damme W. Addressing access barriers to health services: an analytical framework for selecting appropriate interventions in low-income Asian countries. Health Policy Plan 2012; 27: 288-300.
7. Wamsiedel M, Vincze E, Ionescu I. Roma health: the perspective of actors involved in the health system – doctors, health mediators and patients. Bucharest: Romani CRISS, 2012.
8. Inequalities and multiple discrimination in access to and quality of healthcare. European Union Agency for Fundamental Rights. Report 2013.
9. Simon P. Ethnic statistics and data protection in the Council of Europe countries. Strasbourg: ECRI/Council of Europe. Report 2007.
10. Kühlbrandt C, Footman K, Rechel B, McKee M. An examination of Roma health insurance status in Central and Eastern Europe. Eur J Public Health 2014; 24: 707-12.
11. Balázs P, Rákóczi I, Grenczer A, Foley KL. Birth weight differences of Roma and non-Roma neonates – public health implications from a population based study in Hungary. Cent Eur J Public Health 2014; 22: 24–8.
12. Bobak M, Dejmec J, Solansky I, Sram RJ. Unfavourable birth outcomes of the Roma women in the Czech Republic and the potential explanations: a population-based study. BMC Public Health 2005; 5: 106.
13. Cemlyn S, Greenfields M, Burnett S, Matthews Z, Whitwell C. Inequalities experienced by Gypsy and traveller communities: a review. Manchester: Equality and Human Rights Commission, 2009.
14. European Union minorities and discrimination survey. European Union Agency for Fundamental Rights. Luxembourg: FRA, 2009.
15. National focal point social thematic study: the situation of Roma. (Netherlands) FRANET, 2012. Available March 30, 2016 from: http://fra.europa.eu/sites/default/files/situation-of-roma-2012-nl-v1-1.pdf.
16. De Hert P, van Caeneghem J, Milieu Ltd. Belgium. National focal point social thematic study; the situation of Roma. (Belgium) FRANET, 2012. Available March 30, 2016 from: http://www.vub.ac.be/LSTS/pub/Dehert/445.pdf.
17. Giménez Adelantado A. Intercultural mediation with the Roma community in health-care contexts. RECERCA 2011; 11: 125-43.
18. Hofstede G, Hofstede GJ, Minkov M. Cultures and organizations: software of the mind. 3rd ed. New York: McGraw-Hill, 2010.
19. Concluding the decade of Roma inclusion 2005-2015. Available March 30, 2016 from: http://www.romadecade.org/about-the-decade-decade-future.
20. Report on the implementation of the EU framework for National Roma Integration Strategies, COM(2014) 209 final. Luxembourg: European Commission, 2014.
21. Council of Europe. Roma and travellers. Available March 30, 2016 from: www.coe.int/t/dg3/romatravellers.
22. World Health Organization, Regional Office for Europe. Roma health. Available March 30, 2016 from: www.euro.who.int/en/health-topics/health-determinants/roma-health.
23. Meads G. The organisation of primary care in Europe: part 1 - agenda: position paper of the European Forum for Primary Care. Qual Prim Care 2009; 17: 133-43.
24. CanMeds Physician Competency Framework. The Royal College of physicians and surgeons of Canada. Available March 30, 2016 from: http://www.royalcollege.ca/portal/page/portal/rc/resources/aboutcanmeds.
25. MacFarlane A, O'Donnell C, Mair F, O'Reilly-de Brún M, de Brún T, Spiegel W, et al; REsearch into implementation STrategies to support patients of different ORigins and language background in a variety of European primary care settings (RESTORE): study protocol. Implement Sci 2012; 7: 111.
26. Chiriac M, Grigore D, Lacramioara O, Sanda D, Radulescu M, Patruleasa S, et al. Introduction to Roma culture: exploring cultural diversity for family doctors. Bucharest: JSI Research & Training Institute, 2007.
27. Anon. Handbook for action in the area of health services with the Roma community. Madrid: Ministry of Health and Consumer Affairs, Fundación Secretariado Gitano, 2006.
28. Zelko E. Roma attitudes to health and intervention program. Int J Integrat Care 2013; 13(Suppl EFPC conference).
29. Rotar-Pavlic D, Zelko E, Kersnik J, Lolic V. Health beliefs and practices among Slovenian Roma and their response to febrile illnesses: a qualitative study. Zdrav Var 2011; 50: 169-74.
30. Willems S, Cottenie B, Hanssen L. Health care & Roma: a descriptive study. Workshop on Primary Care and Roma Population/Patients EFPC Conference. Barcelona, 2014.
31. Dinca I. From science to practice – ECDC guide in use. Workshop on Primary Care and Roma Population/Patients EFPC Conference. Barcelona, 2014.
32. Silva P. Roma health mediators, successes and challenges. New York: Open Society Public Health Program, Open Society Foundations, 2011.

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HEALTH CARE REFORMS
ZDRAVSTVENE REFORME

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Letter to the Editor

ABSTRACT

Keywords:
health care systems, health care reforms, knowledgeable personnel, governmental support, leadership, communication

In large systems, such as health care, reforms are underway constantly. The article presents a definition of health care reform and factors that influence its success. The factors being discussed range from knowledgeable personnel, the role of involvement of international experts and all stakeholders in the country, the importance of electoral mandate and governmental support, leadership and clear and transparent communication. The goals set need to be clear, and it is helpful to have good data and analytical support in the process. Despite all debates and experiences, it is impossible to clearly define the best approach to tackle health care reform due to a different configuration of governance structure, political will and state of the economy in a country.

IZVLEČEK

Ključne besede:
zdravstveni sistemi, zdravstvene reforme, strokovnost, vladna podpora, vodenje, komuniciranje

V velikih sistemih, kot je zdravstveni, se reforme oblikujejo ves čas. V prispevku so prikazane značilnosti zdravstvene reforme in dejavniki, ki določajo njeno uspešnost. V članku poudarjamo pomen znanja tima, ki zdravstveno reformo izvaja, pomen vloge mednarodnih strokovnjakov in vseh deležnikov v domačem zdravstvenem sistemu, pomen mandata in vladne podpore predlagani reformi, pomen vodenja reforme in jasne ter transparentne komunikacijske strategije. Postavljeni cilji reforme morajo biti razumljivi, v veliko pomoč izpeljavi reforme pa so dobri podatki in njihova analiza. Kljub vsem razpravam in izkušnjam številnih držav ni mogoče natančno opredeliti najboljšega pristopa za izvedbo zdravstvene reforme, saj se mora proces izvedbe prilagajati strukturam vodenja, politični volji ter ekonomskemu stanju v državi.

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Health-care systems are large and complex systems that undergo changes constantly. In order to steer them in the set direction, health sector reforms are under consideration in countries throughout the world, no matter their level of income.

A reform implies sustained, purposeful, and fundamental changes. While it is difficult to define precisely what constitutes a true health care reform, there is a widespread consensus that a reform is a process of change involving the what, who, and how of health sector action. Health sector reform should be based on a holistic view of the health sector.

Health system reforms can be divided into partial and global reforms. Partial reforms (day-to-day operational changes, developmental incremental issues) are aimed to only change one aspect of the system, so as to address a specific concern in a developing society (e.g. ageing). Global structural reforms, on the other hand, try to reshape the whole health care system. The sum of partial reforms in several elements of the system can lead to a global, comprehensive reform. Global reforms are designed and implemented when a set of major changes have occurred in the society (adding up demographic, political, ideological, social, economic, technological, cultural changes). Throughout the history, the USA have implemented global reforms of their health system each 25 or 50 years.

A considerable debate has been ongoing about the efficiency of a swift and radical reform compared to more incremental approaches. The ability to introduce rapid reforms depends mainly on the configuration of the governance structure and on political will, but it is also influenced by contextual circumstances, such as the state of the economy or the degree of support from key stakeholders. Radical changes based on ideology may not be politically and technically sustainable in the long term. An incremental approach may lead to more socially sustainable policies in the long term, especially in less stable political and economic environments (1). The best approach depends on country specific circumstances, but flexibility is recommended to be built into the implementation process; e.g. a combination of "big-bang" approach to pass the legislation and steady implementation within health sector institutions. Provider interests tend to be very well organised and generally command greater public trust than politicians. They therefore have enormous power over the reform process. It has been shown that when acknowledged leaders accept changes, others follow. The success of the implementation will depend on identifying strategies that help to change behaviour and inventing incentives for change.

The prerequisite for a successful health care system reform is knowledge of the key personnel included in the reform process, as well as detailed analyses focused on historical changes of the system. The preparation phase can build up experience and knowledge about the roles and positions of various stakeholders, which is important for the reform leaders. The evidence suggests that cross-national studies and international policy dialogue can speed up the process of "policy learning", enabling governments to learn from one another, and thus avoid repeating others' errors, although some degree of adaptation is usually required. While all countries have encountered the same basic challenges, they have manifested themselves differently because of differences in institutional and historical contexts (2).

The evidence suggests that an electoral mandate appears to be the most important in respect to reforms. It is not enough to win an election or command a parliamentary majority: it also matters a great deal if the government has made the case for reform to the voters before the election. Governmental mandate is not infinitely long. The skeleton of the reform should be launched in the starting days, the goals and content of the health care reform should represent the basis of the pre-election period. The mandate periods themselves are simply too short to be spent on situation analyses and goal setting (2).

Political will is a significant factor affecting policy implementation, and firm governmental commitment to changes is the essential aspect of success. The main goals should be necessarily inserted into the governmental political agenda, agreed and fully supported by the Ministry of Finance. An important constraint of health system reforms has been the position of health ministries, being accorded a comparatively low position in the political hierarchy. Besides, ministries of health are weak in comparison to social security or health insurance agencies (3).

A strong leadership of individual policy makers and institutions charged with carrying out reforms is essential. Lack of political leadership and unclear or vague general ideas of objectives can create a political vacuum, in which a variety of agencies, organisations and groups will seek to push their own reform agendas that are, to a larger extent, aligned with their own goals. Multiplicity of approaches and agendas to policy formulation can lead to inaction due to enhanced strength of partial interests of particular groups of stakeholders, such as insurance companies or groups of patients or providers (3).

Clear communication of long-term objectives of a reform is particularly important in a crisis: where reforms are undertaken in response to exogenous shocks, there is often a lack of clarity about their aims. An evidence-based and analytically sound case for reform serves both to improve the quality of policy and to enhance prospects for reform adoption (2).

The inclusive and collaborative approach to the reform is recommended from the beginning. The bottom up approach with building up achievements regularly with a clear mind set on predefined goals is the best way to proceed. It is important to engage those who will be most directly affected by the reform. Inclusive, consultative policy processes are no guarantee against conflict, but they seem to pay dividends over time, not least by allowing greater trust among the parties involved. The key to successful implementation is maximizing the potential of the so-called "policy friend" by establishing the alliance of supporters, individuals, organisations, agencies to oppose the influence of the opposition.

In all studies, the key question emerges of whether, when and how to compensate those who will lose out as a result of a reform. Concessions to potential losers need not compromise the essentials of the reform: it is often possible to improve the prospects of particular groups that will be affected by a reform without contradicting its overall aims. The failure to compensate may reinforce opposition to the reform, but excessive compensation may be costly or may simply blunt the effects of the reform. The most common compensation strategies involve "grandfathering" rents and long transition periods. Concessions in the form of "side payments", such as policies in other domains that might offset the cost of reform for some groups, are employed less frequently (2). The general population is a particular set of stakeholders that can influence change. Persuading the general citizens of the need for reform can have an important enabling effect. This is especially true when the reform being implemented leads to a growing conflict between social and market values. Broad public support for reform can be an effective catalyst for change, just as lack of it can be a major barrier (4). The media can often be effective in promoting reforms and in seeking public support (5).

There is little agreement about what constitutes "best practice" for a successful reform. This is partly due to the complex mix of goals to be pursued, but it also reflects the lack of reliable, generally accepted indicators of the quality of outcomes and their value. Evidence-based reform is difficult where the evidence is either lacking or contested. That is why work by national or international organisations to generate reliable, credible evidence on policy outcomes can be very valuable in clarifying the terms of debate.

A good information system and technical skills, together with managerial skills, PR and media role have been shown as an important guarantee for the progress in health system reforms. Health care reforms, in particular, tend to be expensive - even if cost containment is expected in the long term, it often involves expensive concessions in the short term. Policy-makers should be prepared to invest additional resources to achieve particular objectives. More and better data and analysis, including international comparisons, often help, although a great deal depends on consensus regarding the value and meaning of such evidence.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

REFERENCES

1. Wlodarczyk C. Expert network on health ad health care financing strategies in countries of central nad eastern Europe, or on the advantages of neighbourly cooperation in health care refors. Antidotum 1993; 1(Suppl): 8-21.
2. OECD. Making reform happen: structural priorities in times of crisis. Paris: OECD, 2010.
3. Joncyk J. The Polish dilemma and proposals for change. Antidotum 1993; 1(Suppl): 81-4.
4. Saltman R, Figueras J. European health care reforms: analysis of current strategies. WHO Regional Publications, European Series 72. Copenhagen: WHO Regional Office for Europe, 1997.
5. Tender J, Greedheim S. Trust in a rent seeking world: health and government transformed in Northeast Brazil. World Develop 1994; 22: 1771-91.

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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).

ABBREVIATIONS

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.

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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 pridržuje pravico, da kontaktira etično komisijo.

Prav tako morajo avtorji, ki poročajo o ljudeh ali posredujejo javnosti njihovo slikovno gradivo, pridobiti dovoljenja vseh sodelujočih, da se z vključitvijo v raziskavo strinjajo (v primeru otrok so to starši ali skrbniki). Izjavo o pridobitvi teh dovoljenj morajo avtorji podati v poglavju o metodah dela. Uredništvo si pridržuje pravico vpogleda v to dokumentacijo.

Raziskave na živalih morajo biti izpeljane v skladu z navodili "Animal Research: Reporting In Vivo Experiments" (ARRIVE) in potrjene s strani nacionalne etične komisije. V poglavju o metodah dela in v izjavi na koncu rokopisa morajo avtorji podati izjavo o etiki raziskav na živalih z veljavno številko dovoljenja.

V izjavi na koncu rokopisa morajo biti zapisani morebitni finančni ali drugi interesi farmacevtske industrije ali proizvajalcev opreme ter inštitucij, povezani z objavo v ZV/SJPH.

Avtorji morajo na koncu rokopisa zapisati sledeče izjave:

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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V spletno uredniško aplikacijo se prijavite kot 'avtor'. Prva prijava zahteva vnos podatkov o avtorju, vse naslednje prijave pa le še vnos podatkov za prijavo, ki jih na svoj elektronski naslov prejmete po prvi prijavi v sistem.

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Avtorji, ki v objavo pošiljate raziskovalno delo, opravljeno s pomočjo nekega podjetja, to navedite na koncu rokopisa v izjavi o financiranju.

Polje 'Comments' je namenjeno vašim dodatnim razlagam, navedete lahko tudi predlog recenzentov z imeni, nazivi, e-naslovi in zaposlitvijo.

Podatke o avtorju in soavtorjih vnesite kar se da natančno in popolno. Naveden naj bo korespondenčni avtor (s polnim naslovom, telefonsko številko in elektronskim naslovom), ki bo skrbel za komunikacijo z uredništvom in ostalimi avtorji.

Jezik prispevka je angleščina. Objavljamo izvirne znanstvene članke, sistematične pregledne znanstvene članke, metodologije raziskav in vabljene uvodnike. Pri izvirnih, metodoloških in sistematičnih preglednih znanstvenih prispevkih morajo biti naslov, izvleček in ključne besede prevedeni tudi v slovenščino.

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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Če pri oddajanju rokopisa naletite na nepremostljive težave, se za pomoč obrnite na naslov uredništva: zdrav.var@nijz.si.

V nadaljevanju podajamo še nekaj natančnejših napotkov.

ROKOPIS

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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NASLOV IN AVTORSTVO

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.

IZVLEČEK IN KLJUČNE BESEDE

Izvleček v angleškem in slovenskem jeziku naj bo pri znanstvenem in metodološkem članku strukturiran in naj ne bo daljši od 250 besed v angleščini in 400 besed v slovenščini, izvlečki ostalih člankov so lahko nestrukturirani. Izvleček naj vsebinsko povzema in ne le našteva bistvene vsebine dela. Izogibajte se kraticam in okrajšavam. Napisan naj bo v 3. osebi.

Izvleček znanstvenega članka naj povzema namen dela, osnovne metode, glavne izsledke in njihovo statistično pomembnost ter poglavitne sklepe (struktura IMRC - Introduction, Methods, Results, Conclusions).

Navedenih naj bo 3-10 ključnih besed, ki nam bodo v pomoč pri indeksiranju. Uporabljajte izraze iz MeSH - Medical Subject Headings, ki jih navaja Index Medicus.

KATEGORIJA PRISPEVKA

Kategorijo prispevka predlaga z vnosov v ustrezno polje avtor sam, končno odločitev pa sprejme urednik na osnovi predlogov recenzentov. Objavljamo izvirne znanstvene članke, metodološke članke, sistematične pregledne znanstvene članke in vabljene uvodnike.

REFERENCE

Vsako navajanje trditev ali dognanj drugih morate podpreti z referenco. Reference naj bodo v besedilu navedene po vrstnem redu, tako kot se pojavljajo. Referenca naj bo navedena na koncu citirane trditve. Reference v besedilu, slikah in tabelah navedite v oklepaju z arabskimi številkami ((1), (2, 3), (4-7)). Reference, ki se pojavljajo samo v tabelah ali slikah, naj bodo oštevilčene tako, kot se bodo pojavile v besedilu. Kot referenc ne navajajte izvlečkov in osebnih dogovorov (slednje je lahko navedeno v besedilu). Seznam citirane literature dodajte na koncu prispevka. Literaturo citirajte po priloženih navodilih, ki so v skladu s tistimi, ki jih uporablja ameriška National Library of Medicine v Index Medicus. Uporabljajte numerično citiranje. Imena revij krajšajte tako, kot določa Index Medicus (popoln seznam na naslovu URL: http://www.nlm.nih.gov).

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PRIMERI ZA CITIRANJE LITERATURE

primer za knjigo:

1. Premik M. Uvod v epidemiologijo. Ljubljana: Medicinska fakulteta, 1998.
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 1, 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.

primer za članek iz revije:

5. Barry HC, Hickner J, Ebell MH, Ettenhofer T. A randomized controlled trial of telephone management of suspected urinary tract infections in women. J Fam Pract 2001; 50: 589-94.

primer za članek iz revije, kjer avtor ni znan:

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

primer za članek iz revije, kjer je avtor organizacija:

7. 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.

primer za članek iz suplementa revije z volumnom in s številko:

8. Shen HM, Zhang QF. Risk assessment of nickel carcinogenicity and occupational lung cancer. Environ Health Perspect 1994; 102(Suppl 2): 275-82.
9. Payne DK, Sullivan MD, Massie MJ. Women's psychological reactions to breast cancer. Semin Oncol 1996; 23 (Suppl 2): 89-97.

primer za članek iz zbornika referatov:

10. Sugden K, Kirk R, Barry HC, Hickner J, Ebell MH, Ettenhofer T. 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.

primer za magistrske naloge, doktorske disertacije in Prešernove nagrade:

11. Bartol T. Vrednotenje biotehniških informacij o rastlinskih drogah v dostopnih virih v Sloveniji: doktorska disertacija. Ljubljana: Biotehniška fakulteta, 1998.

primer za elektronske vire:

12. Mendels P. Textbook publishers extend lessons online. Available Sept 23, 1999 from: http://www.nytimes.com/library/tech/99/09.

TABELE

Tabele v angleškem jeziku naj bodo v besedilu prispevka na mestu, kamor sodijo. Tabele naj sestavljajo vrstice in stolpci, ki se sekajo v poljih. Tabele oštevilčite po vrstnem redu, vsaka tabela mora biti citirana v besedilu. Tabela naj bo opremljena s kratkim angleškim naslovom. V legendi naj bodo pojasnjene vse kratice, okrajšave in nestandardne enote, ki se pojavljajo v tabeli.

SLIKE

Slike morajo biti profesionalno izdelane. Pri pripravi slik upoštevajte, da gre za črno-beli tisk. Slikovno gradivo naj bo pripravljeno:

- črno-belo (ne v barvah!);
- brez polnih površin, namesto tega je treba izbrati šrafure (če gre za stolpce, t. i. tortice ali zemljevide);
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MERSKE ENOTE

Naj bodo v skladu z mednarodnim sistemom enot (SI).

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Kraticam in okrajšavam se izogibajte, izjema so mednarodno veljavne oznake merskih enot. V naslovih in izvlečku naj ne bo kratic. Na mestu, kjer se kratica prvič pojavi v besedilu, naj bo izraz, ki ga nadomešča, polno izpisan, v nadaljnjem besedilu uporabljano kratico navajajte v oklepaju.

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