

SUBJEKTIVNA PROCENA ZDRAVSTVENOG STATUSA I BROJ DANA NA BOLOVANJU KOD LJUDI KOJI BOLUJU OD ASTME I HRONIČNE OPSTRUKTIVNE BOLESTI PLUĆA

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SAŽETAK

Uvod/Cilj: Nema dovoljno studija koje se bave poređenjem kvaliteta života u vezi sa zdravljem (engl. *Health-Related Quality of Life* – HRQoL) kod osoba koje boluju od astme i osoba koje boluju od hronične opstruktivne bolesti pluća (HOBP). Cilj ovog istraživanja je bio da se ispita i uporedi zdravstveni status koji su prijavljivale osobe obbolele od astme i HOBP.

Metode: Podaci su prikupljeni od odraslih ispitanika, koji su dolazili u ustanove primarne zdravstvene zaštite uz pomoć opšteg upitnika za ispitivanje zdravstvenog statusa i srpske verzije HRQoL-14. Metod mečovanja tzv. „*propensity score*“ korišćen je da se uporede ispitanici oboleli od astme i HOBP u odnosu na pol, godine, nivo obrazovanja i pridržavanje terapije.

Rezultati: Ukupno je 1954 pacijenata (47% muškaraca i 53% žena) učestvovalo u studiji. Prosečna starosna dob pacijenata obolelih od astme bila je 49,4±15,5, dok su pacijenti oboleli od HOBP bili stariji – 59,5±12,4. U obe grupe, 60% pacijenata je prijavilo loš zdravstveni status. Nije bilo razlike između pacijenata koji boluju od astme i pacijenata koji boluju od HOBP po pitanju subjektivne procene zdravstvenog statusa i broja dana na bolovanju. Pacijenti oboleli od astme i HOBP prijavili su najveći broj dana sa poremećajima sna, zatim dana sa simptomima anksioznosti i depresivnih simptoma, a najmanji broj dana kada su bili prisutni bolovi.

Zaključak: Ovi podaci ukazuju na potrebu da se poboljša ciklus sna kod pacijenata sa astmom i HOBP. Oni bi mogli da se koriste u cilju ispitivanja specifičnih karakteristika sna kod osoba sa astmom i HOBP.

Ključne reči: astma, HOBP, primarna zdravstvena zaštita, pacijenti, subjektivni zdravstveni status

Uvod

Napredak u lečenju hroničnih bolesti doveo je do povećanja očekivanog životnog veka osoba koje žive sa hroničnim stanjima. Međutim, očekivani životni vek i nije toliko relevantan ako osobe koje boluju od hroničnih bolesti nemaju zadovoljavajuću kvalitet života (1,2). Tokom prethodnih decenija, dobar kvalitet života povezan sa zdravljem (engl. *Health Related Quality of Life* - HRQoL) kod osoba koje boluju od hroničnih oboljenja dospeo je u fokus pacijenata, njihovih negovatelja, zdravstvenih radnika i drugih zainteresovanih lica (2).

Merenje kvaliteta života koji se povezuje sa zdravljem kod osoba sa hroničnim bolestima uključuje individualno viđenje bolesti i omogućava detaljan uvid u ograničenja i aktivnosti u svakodnevnom životu, kao i efikasnost terapije (2,3).

Astma i hronična opstruktivna bolest pluća (HOBP) su česte hronične bolesti respiratornog trakta. Svetska prevalencija astme varira od manje od 10% u Aziji do otprilike 20% u Ujedinjenom Kraljevstvu, drugim zapadnoevropskim zemljama i Australiji, dok prevalencija HOBP varira od 11,6% u

SELF-PERCEIVED HEALTH STATUS AND NUMBER OF SICK DAYS IN PEOPLE WITH ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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SUMMARY

Introduction/Aim: There is a lack of studies focusing on the comparison of health-related quality of life (HRQOL) between people with asthma and people with chronic obstructive pulmonary disease (COPD). The purpose of this study was to examine and compare self-reported health status in people who have asthma and people who have COPD.

Methods: Data were collected from adult participants who came to primary health care institutions using a general questionnaire to examine their health status and the Serbian version of the HRQOL-14. The propensity score method was used to match people with asthma and COPD on age, gender, education level and adherence to therapy.

Results: A total of 1,954 patients (47% men, 53% women) were included in the study. The average age of patients with asthma was 49.4±15.5, whereas the patients with COPD were older - 59.5±12.4. In both groups, 60% of the participants reported their health status as poor. No difference was found between patients with asthma and patients with COPD in terms of self-perceived general health status and the number of sick days. Patients with asthma and COPD reported the greatest number of days with sleep disorders, followed by days with symptoms of anxiety and depressive symptoms and the least number of days with having pain.

Conclusion: These data indicate the need to improve sleep patterns in people with asthma and COPD. These data could be used to further examine specific features of sleep among people with asthma and COPD.

Keywords: asthma, COPD, primary health care, patients, self-reported health status

Introduction

Advances in the treatment of chronic diseases have led to the increase in life expectancy of people who live with chronic conditions. However, life expectancy may not be as relevant unless people with chronic diseases have satisfactory quality of life (1,2). Over the last decades good health-related quality of life (HRQOL) in people with chronic diseases have become the focus of patients, their caregivers, health care workers and other stakeholders (2). The measurement of HRQOL among people with chronic diseases includes an individual perception of the disease and allows for a more detailed insight into the limitations and activities of daily living as well as the effectiveness of therapy (2,3).

Asthma and chronic obstructive pulmonary disease (COPD) are common chronic diseases of the respiratory tract. The worldwide prevalence of asthma ranges from to less than 10% in Asia to around 20 % in the United Kingdom, other Western European countries and Australia, rope, while the COPD prevalence ranges from 11.6% in Oceania to 13.9% in Africa (4, 5). The prevalence of asthma and COPD in the Republic of Serbia accounts for less than 5% (4.1% for asthma and 4.5% for COPD) (6). Because of the global aging of the population, we may anticipate that the prevalence of asthma and COPD will be rising. It is not surprising that previous studies found that people with asthma and COPD have lower HRQOL compared to their

Okeaniji do 13,9% u Africi (4,5). Prevalencija astme i HOBP u Republici Srbiji iznosi manje od 5% (4,1% za astmu i 4,5% za HOBP) (6). Zbog činjenice da je stanovništvo na globalnom nivou sve starije, može se predvideti da će prevalencija astme i HOBP rasti. Ne iznenađuje što je u prethodnim studijama pokazano da osobe koje boluju od astme i HOBP imaju niži HRQoL u poređenju sa zdravim pojedincima (7,10). U stvari, postoji jedan broj faktora koji utiču na pad HRQoL kod osoba koje boluju od astme i HOBP, poput starije dobi, ženskog pola, nižeg socijalnog statusa, dužeg trajanja bolesti, postojanja komorbiditeta, loše kontrole bolesti, pridržavanja terapije, prihvatanja bolesti itd. (8,11). Ovi podaci ukazuju da su neki faktori nereverzibilni i ne mogu se modifikovati. Ovi faktori treba da budu cilj u naporima da se poboljša HRQoL kod osoba obolelih od astme i HOBP.

Dok su prethodne studije istraživale HRQoL kod osoba sa astmom i HOBP odvojeno, nedostaju studije koje se fokusiraju na poređenje HRQoL među osobama koje boluju od astme i osobama koje boluju od HOBP. S obzirom da se ove hronične bolesti uglavnom leče na nivou primarne zdravstvene zaštite, od ključne važnosti je da lekari opšte prakse dovoljno razumeju izazove sa kojima se sreću ovi pacijenti u svakodnevnom životu. Cilj ove studije je bio da ispita i uporedi zdravstveni status koji su prijavljivale osobe obolele od astme i osobe obolele od HOBP.

Metode

Ispitanici

Ovo istraživanje predstavlja deo veće studije, koja je sprovedena od januara do decembra 2011, a fokus ove studije bio je na kvalitetu života u vezi sa zdravljem kod osoba sa hroničnim bolestima u Republici Srbiji (12). Studija preseka je sprovedena u više institucija primarne zdravstvene zaštite. Ukupno 36 od 157 ustanova primarne zdravstvene zaštite je nasumično izabrano iz ruralnih i urbanih područja zemlje. Odabrane su ustanove primarne zdravstvene zaštite koje se nalaze u Vojvodini, Šumadiji i zapadnoj Srbiji, južnoj i istočnoj Srbiji, na severu Kosova i u Beogradu. Kriterijumi za uključivanje bili su starosna dob od 18 do 90 godina, mentalna sposobnost da se popuni upitnik i pristanak da se učestvuje u studiji. Ispitanike su činili pacijenti sa astmom i HOBP koje su

dijagnostifikovali lekar opšte prakse i pulmolog. Astma je dijagnostifikovana na osnovu preporuke Globalne inicijative za astmu (engl. *Global Initiative for Asthma* - GINA) (13), dok je dijagnoza HOBP postavljena na osnovu preporuke Globalne inicijative za hroničnu opstruktivnu bolest pluća (engl. *Global Initiative for Chronic Obstructive Lung Disease* - GOLD) (14). Klasifikacija astme i HOBP sprovedena je na osnovu 10. verzije Internacionalne klasifikacije bolesti (ICD-10).

Studiju je etički odobrila svaka ustanova primarne zdravstvene zaštite gde je studija sprovedena.

Instrument

Korišćen je upitnik za prikupljanje podataka. Prvi deo upitnika je popunjavao lekar koji je unosio podatke o bolesti, trajanje u mesecima i pridržavanje terapije.

Drugi deo upitnika su popunjavali ispitanici. Sastojao se od pitanja koja su ispitivala socijalne i demografske karakteristike i pitanja koja su se ticala HRQoL.

Da bismo ispitivali HRQoL, koristili smo srpsku verziju HRQoL-14, generički upitnik koji je izdao Centar za kontrolu i prevenciju bolesti (CDC), a koji je ispitivao četiri domena HRQoL: opšte zdravlje, fizičko zdravlje, mentalno zdravlje i ograničenu aktivnost (15). Pokazalo se da je upitnik HRQoL-14 validan i pouzdan u populacionim studijama (2). Upitnik je preveden na srpski jezik uz pomoć standardne metodologije za kulturnu adaptaciju upitnika na novom jeziku. Dvoje ljudi kćiji je maternji jezik srpski jezik i koji su odlični poznavaoi engleskog jezika preveli su upitnik svako za sebe. Stručnjaci su razmatrali prevode i generisana je jedna finalna verzija upitnika HRQoL-14. Ova verzija je prevedena na engleski jezik radi poređenja. Nisu primećene velike razlike. Pilot-testiranje upitnika na srpskom jeziku je sprovedeno na 10 osoba koje boluju od astme i HOBP da bi se proverilo razumevanje i opšte shvatanje stavki u upitniku. Nisu zabeleženi posebni komentari. Psihometrijsko testiranje srpske verzije HRQoL-14 pokazalo je Kronbahov alfa koeficijent od 0,78, što se smatralo odgovarajućim.

Za procenu opšteg zdravlja, ispitanici su ocenjivali trenutni zdravstveni status zaokruživanjem jednog od sledećih odgovora: „Odličan“, „Vrlo dobar“, „Dobar“, „Prosečan“ i „Loš“. Odgovori su

healthy counterparts (7-10). In fact, there is a number of factors affecting the decline of HRQOL in persons with asthma and COPD, such as being older, female gender, lower social status, longer disease duration, having comorbidities, poor disease control, compliance with therapy, disease acceptance etc. (8, 11). These findings suggest that some factors are irreversible and cannot be modified (age, gender, disease duration), however, some factors may be modifiable. These factors should be targeted in efforts to improve the HRQOL in people with asthma and COPD.

While previous studies explored HRQOL among people with asthma and COPD separately, there is a lack of studies focusing on the comparison of HRQOL between people with asthma and people with COPD. As these chronic diseases are typically managed at the primary health care level, it is essential that general practitioners sufficiently understand the challenges that these patients encounter in everyday life. The purpose of this study was to examine and compare self-reported health status in people who have asthma and people who have COPD.

Methods

Participants

This research is a part of a larger study, conducted between January and December 2011, focusing on HRQOL of people with chronic diseases in the Republic of Serbia (12). A cross-section study was conducted in multiple primary health care institutions. A total of 36 out of 157 primary health centers (PHC) were randomly chosen from both rural and urban areas of the country. The selection of PHC included the ones located in Vojvodina, Šumadija and Western Serbia, Southern and Eastern Serbia, Northern Kosovo and Belgrade. The inclusion criteria were age range from 18 to 90 years, being mentally able to participate in this study by filling in the questionnaire and providing a signed consent for participation. The participants comprised patients with asthma and COPD diagnosed by a general practitioner and a pulmonologist. Asthma was diagnosed based on the recommendation of the Global Initiative for Asthma (GINA) (13), while COPD was diagnosed according to the recommendation of Global Initiative for Chronic Obstructive Lung Disease

(GOLD) (14). The classification of asthma and COPD was performed according to the 10th version of the International Classification of Diseases (ICD-10).

The study was ethically approved by each primary health care institution where the study was conducted.

Instrument

A questionnaire was used to collect data. The first part of the questionnaire was filled in by a treating physician who entered the information about the disease, its duration in months and adherence to treatment.

The second part of the questionnaire was filled in by the participants. It consisted of questions examining social and demographic characteristics and questions concerning HRQOL.

To examine HRQOL, we used the Serbian version of HRQOL-14, a generic questionnaire issued by the Center for Disease Control and Prevention (CDC) questionnaire, which explored four domains of HRQOL: general health, physical health, mental health and restricted activity (15). The HRQOL-14 questionnaire was shown to be valid and reliable in population-based studies (2). The questionnaire was translated to Serbian using the standard methodology for cultural adaptation of questionnaires in a new language. Two people who were native Serbian speakers and who were proficient in English language translated the questionnaire separately. The translations were discussed among the experts and one final version of Serbian HRQOL-14 was generated. This version was translated back to English for comparison. No major differences were observed. The questionnaire in Serbian was pilot tested on 10 people with asthma and COPD to check understanding and overall comprehension of items. No particular comments were recorded. The psychometric testing of the Serbian version of HRQOL-14 suggested a Cronbach's alpha coefficient of 0.78, which was deemed appropriate.

To assess general health, participants were asked to rate their current health status by circling one of the following answers: 'Excellent', 'Very good', 'Good', 'Average' and 'Poor'. Answers were subsequently divided into two groups: 'Excellent/very good/good' vs. 'average/poor'. The estimation of asthma and COPD impact on the domains of physical and mental health and everyday activity

potom podeljeni u dve grupe: „Odličan/vrlo dobar/dobar“ naspram „prosečan/loš“. Procena uticaja astme i HOBP na domene fizičkog i mentalnog zdravlja i ograničenja svakodnevnih aktivnosti sprovedena je korišćenjem stavki u kojima su učesnici sami ocenjivali sopstveni zdravstveni status i prisustvo simptoma (bol, depresija, anksioznost i poremećaji sna) u proteklih 30 dana. Odgovori su bili dihotomni: „retko“, ako su simptomi trajali manje od 14 dana i „često“ bolovanje ukoliko su simptomi bili prisutni više od 14 dana tokom proteklih 30 dana. Ovaj pristup je pomogao da se utvrdi kod kojih osoba je hronična bolest imala ozbiljan uticaj na svakodnevno funkcionisanje.

Statistička analiza

Deskriptivna statistika, uključujući prosečnu i standardnu devijaciju kontinualnih varijabli ili brojeva i procenti kategoričkih varijabli, korišćeni su za karakterizaciju uzorka studije. Korišćen je metod mečovanja tzv. „propensity score“, odnosno verovatnoća da osobe imaju određeni set varijabli. Mečovanje je izvedeno prema polu, starosti, nivou obrazovanju i primenjene terapije. Ova procedura je izvršena u statističkom programu za obradu po-

dataka R uz korišćenje paketa *MatchIt* (16). Ovaj pristup je korišćen da bi se smanjio potencijalni efekat zabune koji nastaje zbog socio-demografskih i kliničkih razlika.

Pirsonov hi-kvadrat test je korišćen za poređenje kategoričkih varijabli između ljudi sa astmom i HOBP. Man-Vitnijev test je primenjen da bi se testirale razlike u kontinualnim varijablama između dva poduzorka.

Nivo značajnosti testa je bio $p=0,05$. Statistička analiza je sprovedena uz pomoć SPSS, verzije 20.

Rezultati

Nakon sprovođenja procedure mečovanja, 1.954 ispitanika je uključeno u ovu studiju (47% muškaraca i 53% žena). Ispitanici su podeljeni u dve grupe. Prvu grupu su činili ispitanici sa potvrđenom dijagnozom astme (977, 46,3% muškaraca i 53,7% žena), dok su drugu grupu činili ispitanici sa potvrđenom dijagnozom HOBP (takođe 977, 47,7% muškaraca, 52,3% žena). Prosečna starosna dob ispitanika bila je $54,7 \pm 14,8$ godine – kod ispitanika obolelih od astme prosečna starost bila je $49,4 \pm 15,5$, dok su ispitanici oboleli od HOBP bili stariji – $59,5 \pm 12,4$. U obe grupe većina ispitanika (47,8% sa astmom i

Tabela 1. Demografske karakteristike i pridržavanje terapije uzorka studije prema dijagnozi i ispitivanje adherentnosti u ispitivanom uzorku u odnosu na dijagnozu

Varijabla	Astma (n=977)	HOBP (n=977)	p vrednost
Pol, n (%)			0.526
Muški	452 (46,3)	466 (47,7)	
Ženski	525 (53,7)	511 (52,3)	
Starost, n (%)			1,000
<20	1 (0,1)	1 (0,1)	
20-29	20 (2)	20 (2)	
30-39	79 (8,1)	79 (8,1)	
40-49	197 (20,2)	197 (20,2)	
50-59	263 (26,9)	264 (27)	
60-69	284 (29,1)	284 (29,1)	
70+	133 (13,6)	132 (13,5)	
Nivo obrazovanja, n (%)			0,768
Osnovna škola	235 (24,1)	235 (24,1)	
Srednja škola/gimnazija	467 (47,8)	466 (47,7)	
Visoko obrazovanje	275 (28,1)	276 (28,2)	
Pridržavanje terapije, n (%)			1,000
Ne	6 (0,6)	6 (0,6)	
Da, na osnovu samoinicijative	30 (3,1)	30 (3,1)	
Da, po preporuci lekara	941 (96,3)	941 (96,3)	

HOBP – hronična opstruktivna bolest pluća

restriction was carried out using items where the participants themselves assessed their own health status and presence of the symptoms (pain, depression, anxiety and sleep problems) in the past 30 days. The answers were dichotomized as “rare”, if the symptoms appeared at a frequency of less than 14 days and “frequent” sick days, if the symptoms were present over more than 14 days in the past 30 days. This approach helped to distinguish people whose chronic disease had a more severe impact on their daily functioning.

Statistical analysis

The descriptive statistics, including mean and standard deviation of continuous variables or numbers and percentages of categorical variables, were used to characterize the study sample. We used the propensity score method to match people with asthma and COPD on age, gender, education level and adherence to therapy. The R package MatchIt was used to match the subsamples of participants based on the propensity score with one-to-one nearest-neighbor matching on the

following covariates: age, gender, education and therapy administration (16). This approach was undertaken to reduce potential confounding effect arising from socio-demographic and clinical differences.

The Pearson’s chi-square test was used to compare categorical variables between people with asthma and COPD. The Mann-Whitney test was applied to test the differences in the continuous variables between the two subsamples.

The significance level was considered at $p=0.05$. The statistical analysis was conducted using the SPSS, version 20.

Results

After performing the matching procedure, 1,954 participants were included in this study (47% men, 53% women). The participants were divided into two groups. The first group included participants with verified asthma (977, 46.3% men, 53.7% women), while the second group consisted of participants with verified COPD (also 977, 47.7% men, 52.3 women). The average age of

Table 1. Demographic characteristics and adherence to treatment of the study sample according to the diagnosis

Variable	Asthma (n=977)	COBP (n=977)	p value
Gender, n (%)			0.526
Male	452 (46.3)	466 (47.7)	
Female	525 (53.7)	511 (52.3)	
Age, n (%)			1.000
<20	1 (0.1)	1 (0.1)	
20-29	20 (2)	20 (2)	
30-39	79 (8.1)	79 (8.1)	
40-49	197 (20.2)	197 (20.2)	
50-59	263 (26.9)	264 (27)	
60-69	284 (29.1)	284 (29.1)	
70+	133 (13.6)	132 (13.5)	
Education level, n (%)			0.768
Primary school	235 (24.1)	235 (24.1)	
Secondary/high school	467 (47.8)	466 (47.7)	
Higher	275 (28.1)	276 (28.2)	
Adherence to the treatment, n (%)			1.000
No	6 (0.6)	6 (0.6)	
Yes, due to self-initiative	30 (3.1)	30 (3.1)	
Yes, due to physician's recommendation	941 (96.3)	941 (96.3)	

COPD- chronic obstructive pulmonary disease

Tabela 2. Subjektivna procena zdravstvenog statusa i broj dana bolovanja u toku proteklog meseca kod pacijenata koji boluju od astme i hronične opstruktivne bolesti pluća

Varijabla		Astma N (%)	HOBP N (%)	p vrednost
Subjektivna procena zdravstvenog statusa	Odličan, vrlo dobar, dobar	388 (40,3)	385 (39,7)	0,788
	Prosečan, loš	575 (59,7)	585 (60,3)	
	Zdravstveni problemi	14,2 ± 10,9	14,3 ± 10,8	0,867
Broj dana bolovanja (\bar{x} ± SD)	Loše fizičko zdravlje	9,3 ± 8,4	9,5 ± 8,4	0,690
	Loše mentalno zdravlje	7,2 ± 8,4	7,3 ± 8,2	0,896
	Ograničene aktivnosti	6,7 ± 7,9	7,3 ± 8,2	0,169
	Zdravstveni problemi	324 (33,2)	343 (35,1)	0,365
Pacijenti sa ≥14 dana bolovanja	Loše fizičko zdravlje	206 (21,1)	230 (23,5)	0,192
	Loše mentalno zdravlje	140 (14,3)	159 (16,3)	0,233
	Ograničene aktivnosti	148 (15,1)	163 (16,7)	0,354

HOBP – hronična opstruktivna bolest pluća; \bar{x} - srednja vrednost; SD-standardna devijacija

47,1% sa HOBP) je prijavila srednji nivo obrazovanja. Više od 95% ispitanika u obe grupe izjasnilo se da koriste terapiju redovno kao što im je prepisao njihov lekar. Nije bilo razlike između ove dve grupe ispitanika u odnosu na pol, starost, nivo obrazovanja i pridržavanje terapije (Tabela 1).

U obe grupe, 60% ispitanika označilo je zdravstveni status kao loš. Nije bilo razlike između ispitanika koji boluju od astme i ispitanika koji boluju od HOBP u smislu subjektivne percepcije opšteg zdravstvenog stanja. Takođe, kada je u pitanju broj dana na bolovanju, nije bilo razlike između ispitanika sa astmom (14,2 ± 10,9) i ispitanika sa HOBP (14,3 ± 10,8). Od ispitanika koji su oboleli od astme, 21,1% je prijavilo da su 14 i više dana bili lošeg zdravstvenog stanja, dok je 14,3% prijavi-

lo loše mentalno zdravlje. Od ispitanika koji boluju od HOBP, 32,5% se osećalo fizički loše 14 i više dana tokom proteklog meseca, dok je 16,3% imalo problema sa mentalnim zdravljem (Tabela 2).

Tabela 3 pokazuje prisustvo bola, simptoma depresije, simptoma anksioznosti i poremećaja sna tokom prethodnog meseca, kod ispitanika sa astmom i HOBP. Ispitanici oboleli od astme su prijavljivali najveći broj dana u kojima su bili prisutni poremećaji sna 9,8 ± 8,1, zatim sa simptomima anksioznosti 8,4 ± 8,0 i simptomima depresije 7,2 ± 7,7. Najmanji broj dana 4,5 ± 6,7 je bio bez bola. Slični rezultati su bili kod ispitanika obolelih od HOBP (10,3 ± 8,4; 8,8 ± 8,1; 7,5 ± 8,0; 4,8 ± 7,1). Nije primećena razlika u učestalosti dana bolovanja između dve grupe ispitanika.

Tabela 3. Prisustvo bola, simptoma depresije, simptoma anksioznosti i poremećaja sna tokom proteklog meseca kod pacijenata sa astmom i hroničnom opstruktivnom bolešću pluća

Varijabla		Astma (n=977) \bar{x} ± SD	HOBP (n=977) \bar{x} ± SD	p vrednost
Trajanje simptoma	Prisustvo bola	4,5 ± 6,7	4,8 ± 7,1	0,504
	Prisustvo simptoma depresije	7,2 ± 7,7	7,5 ± 8,0	0,507
	Prisustvo simptoma anksioznosti	8,4 ± 8,0	8,8 ± 8,1	0,405
	Prisustvo poremećaja sna	9,8 ± 8,1	10,3 ± 8,4	0,239
Dobro zdravlje		8,7 ± 9	7,9 ± 9	0,131
Pacijenti sa ≥14 dana bolovanja, n (%)	Prisustvo bola	75 (7,7)	88 (9)	0,288
	Prisustvo simptoma depresije	125 (12,8)	143 (14,6)	0,237
	Prisustvo simptoma anksioznosti	159 (16,3)	176 (18)	0,308
	Prisustvo poremećaja sna	189 (19,3)	220 (22,5)	0,085
Dobro zdravlje ≥14, n (%)		179 (18,3)	170 (17,4)	0,595

HOBP- hronična opstruktivna bolest pluća; \bar{x} - srednja vrednost; SD-standardna devijacija; trajanje simptoma i dobrog zdravlja su takođe uračunati u dane proteklog meseca

Tabela 2. Subjective assessment of health status and number of sick days during the past month in patients with asthma and chronic obstructive pulmonary disease

Variable		Ashtma N (%)	COBP N (%)	p value
Self-perceived health status	Excellent, very good, good	388 (40.3)	385 (39.7)	0.788
	Average, poor	575 (59.7)	585 (60.3)	
	Having health problems	14.2 ± 10.9	14.3 ± 10.8	0.867
Number of sick days ($\bar{x} \pm SD$)	Having poor physical health	9.3 ± 8.4	9.5 ± 8.4	0.690
	Having poor mental health	7.2 ± 8.4	7.3 ± 8.2	0.896
	Having restricted activities	6.7 ± 7.9	7.3 ± 8.2	0.169
	Having health problems	324 (33.2)	343 (35.1)	0.365
People with ≥ 14 sick days	Having poor physical health	206 (21.1)	230 (23.5)	0.192
	Having poor mental health	140 (14.3)	159 (16.3)	0.233
	Having restricted activities	148 (15.1)	163 (16.7)	0.354

COPD- chronic obstructive pulmonary disease; \bar{x} - mean; SD-standard deviation

participants was 54.7±14.8 years – in participants with asthma the average age was 49.4±15.5, whereas the participants with COPD were older - 59.5±12.4. In both groups most participants (47.8% with asthma, 47.1% with COPD) reported secondary education level. Over 95% of people in both groups reported using their therapy regularly as prescribed by the treating physician. There was no difference between these two groups regarding gender, age, education level and adherence to the treatment (Table 1).

In both groups, 60% of the participants reported their health status as poor. No difference was found between people with asthma and participants with COPD in terms of self-perceived

general health status. Also, with regards to the number of sick days, no difference was found between persons with asthma (14.2 ± 10.9) and persons with COPD (14.3 ± 10.8). Of people with asthma, 21.1% reported having spent 14 and more days in poor physical health, and 14.3% reported poor mental health. Of people with COPD, the proportion of participants feeling physically unwell for 14 or more days in the past month accounted for 32.5%, while 16.3% had problems with their mental health (Table 2).

Table 3 shows the presence of pain, depressive symptoms, anxiety symptoms and sleep disorders in the past month, in people with asthma and COPD. People with asthma reported the greatest

Table 3. Presence of pain, depressive symptoms, anxiety symptoms and sleep disorders over the last month in people with asthma and chronic obstructive pulmonary disease

Variable		Asthma $\bar{x} \pm SD$	COBP $\bar{x} \pm SD$	p value
Symptom duration	Having pain	4.5 ± 6.7	4.8 ± 7.1	0.504
	Having symptoms of depression	7.2 ± 7.7	7.5 ± 8.0	0.507
	Having symptoms of anxiety	8.4 ± 8.0	8.8 ± 8.1	0.405
	Having sleep disorders	9.8 ± 8.1	10.3 ± 8.4	0.239
Being in good health		8.7 ± 9	7.9 ± 9	0.131
Patients with ≥ 14 sick, n (%)	Having pain	75 (7.7)	88 (9)	0.288
	Having symptoms of depression	125 (12.8)	143 (14.6)	0.237
	Having symptoms of anxiety	159 (16.3)	176 (18)	0.308
	Having sleep disorders	189 (19.3)	220 (22.5)	0.085
Being in good health ≥ 14, n (%)		179 (18.3)	170 (17.4)	0.595

COPD- chronic obstructive pulmonary disease; \bar{x} - mean; SD-standard deviation; symptom duration and being in good health were also calculated in days in the past month

Diskusija

Rezultati ove studije su pokazali da su ispitanici koji boluju od astme i HOBP bili više dana na bolovanju tokom proteklog meseca. Međutim, nije bilo razlike između ove dve grupe ispitanika sa hroničnim pulmološkim oboljenjima po pitanju zdravstvenog stanja koje su sami prijavljivali i broja dana bolovanja tokom proteklog meseca. Od svih teškoća koje su ispitanici oboleli od astme i HOBP iskusili, najveći uticaj na njihovo zdravlje imao je loš san.

Više od jedne polovine ispitanika u obe grupe ocenili su svoj zdravstveni status kao prosečan ili loš, a jedna trećina je prijavila često bolovanje, koji su ometali njihove svakodnevne aktivnosti. Ovi rezultati su u skladu sa rezultatima prethodnih studija iz literature (3,17,18). Uticaj pola, starosti, nivoa obrazovanja i pridržavanja terapije na zdravstveni status koji su osobe sa astmom i HOBP prijavljivale nije prethodno testiran uz pomoć metode mečovanja tzv. „*propensity score*“. Prethodni empirijski dokazi ukazuju da su ženski pol i starija životna dob u negativnoj korelaciji sa prijavljenim zdravstvenim statusom osoba obolelih od astme i HOBP (17,19). Kod muškaraca obolelih od HOBP, pokazano je da je fizičko zdravlje više narušeno zbog bolesti, dok su žene imale više problema sa mentalnim zdravljem i prihvatanjem bolesti (17). Ovi rezultati naglašavaju razliku u percepciji bolesti među polovima. Takođe, nizak nivo obrazovanja i slabo pridržavanje terapije bili su u korelaciji sa nižim HRQoL među osobama sa astmom i HOBP (19). Jedna studija iz Turske je pokazala da se samo 60% osoba sa astmom i 50% osoba sa HOBP pridržavalo terapije u velikoj meri (20). Stoga, da bi pomogao pacijentima koji boluju od astme i HOBP, lekar opšte prakse bi trebalo da ispita koliko se pacijenti pridržavaju terapije i obezbedi uslove kako da se pacijenti sa astmom i HOBP bolje pridržavali terapije.

Nakon uparivanja pola, starosti, novoa obrazovanja i pridržavanja terapije, nije primećena razlika između ispitanika koji boluju od astme i HOBP u zdravstvenom stanju koje su prijavili. Ranije studije su pokazale da simptomi respiratornog trakta i njihov intenzitet najčešće utiču na kvalitet života pacijenata, bez obzira na bolest (21,22). Kliničke manifestacije ova dva stanja se u velikoj meri preklapaju, i stoga je, diferencijacija između astme i HOBP često problematična i pogrešne dijagnoze se dešavaju (23). Sa druge strane, postoje studije

je koje pokazuju da osobe obolele od HOBP imaju lošiji HRQoL u poređenju sa osobama koje boluju od astme, ali bolji HRQoL u poređenju sa osobama kod kojih se preklapa sindrom astma-HOBP (engl. ACOS) (24,25). Nasuprot tome, u našoj studiji je korišćen metod mečovanja tzv. „*propensity score*“ gde je izvršeno mečovanje ispitanika po polu, starosti, nivou obrazovanja i pridržavanju terapije, i studija je uključila samo pacijente iz primarne zdravstvene zaštite. Ovi pacijenti mogu imati bolju kontrolu bolesti sa manje prisutnim ozbiljnim simptomima bolesti. Takođe, kada su korišćeni drugi generički HRQoL upitnici poput SF-36, da se izmeri HRQoL, pokazano je da se promene u jedinicama (3-5) smatraju klinički značajnim poboljšanjem. Ovaj prag je bio sličan kod ispitanika koji boluju od astme i HOBP (26).

U našoj studiji korišćen je generički upitnik za procenu zdravstvenog statusa osoba obolelih od astme i HOBP, što je omogućilo poređenje pacijenata sa različitim hroničnim stanjima u okviru iste opšte populacije (2,7). Prethodne studije, koje su koristile SF-36 za merenje HRQoL, pronašle su da je HRQoL pacijenata koji boluju od astme i HOBP bio 20 jedinica niži u poređenju sa opštom populacijom (9,10). To znači da HRQoL osoba obolelih od astme i HOBP treba da bude praćen tokom vremena da bi se otkrile određene specifičnosti po pitanju izazova i teškoća sa kojima se oboleli sreću na dnevnoj bazi.

U skladu sa rezultatima iz literature, ispitanici u ovoj studiji, u obe grupe, potvrdili su da je njihovo fizičko zdravlje bilo lošije u poređenju sa drugim aspektima zdravlja (7,21). Prethodne studije su ukazale da su problemi sa kretanjem, ograničena aktivnost i bol/nelagodnost najveći problemi pacijenata koji boluju od astme i HOBP (9,10). Ove rezultate bi trebalo imati u vidu pri definisanju najčešćih prisutnih teškoća za osobe obolele od astme i HOBP.

Ispitanici oboleli od astme i HOBP u našoj studiji prijavili su da im je prisustvo bolesti uglavnom uticalo na san, dok su osećanja anksioznosti i depresije bila na drugom mestu. Prisustvo bola je najređe prijavljivano. Prethodne studije su ukazale da je oko 90% osoba koje boluju od astme i 60% osoba koje boluju od HOBP imalo probleme sa snom i posledično sa osećajem umora i pospanosti tokom dana, što je uticalo na svakodnevno funkcionisanje (27,28). Loš san kod osoba

number of days with sleep disorders 9.8 ± 8.1 , followed by days with symptoms of anxiety 8.4 ± 8.0 and depressive symptoms 7.2 ± 7.7 . The least number of days 4.5 ± 6.7 accounted for having pain. Similar results were found in people with COPD (10.3 ± 8.4 ; 8.8 ± 8.1 ; 7.5 ± 8.0 ; 4.8 ± 7.1 , respectively). No difference was observed in the frequency of sick days between the two groups. results were found in people with COPD (10.3 ± 8.4 ; 8.8 ± 8.1 ; 7.5 ± 8.0 ; 4.8 ± 7.1 , respectively). No difference was observed in the frequency of sick days between the two groups.

Discussion

The results of this study showed that people with asthma and COPD experienced multiple sick days in the past month. However, no difference in self-reported health and number of sick days in the past month were found between these two groups of people with chronic pulmonary diseases. Of all difficulties that people with asthma and COPD experienced, the one that has the strongest impact on their health was poor sleep.

More than one half of people in both groups assessed their health status as average or poor and one third reported frequent sick days, that interfered with their everyday activities. These results are in line with the findings that were previously observed in literature (3,17,18). The impact of gender, age, education level and adherence to the treatment on self-reported health of people with asthma and COPD were not tested previously using the propensity score matching. Previous empirical evidence suggests that female sex and older age were negatively correlated with self-reported health of people suffering from asthma and COPD (17, 19). In men with COPD, it was previously shown that physical health is more strongly impaired due to the illness, whereas women had more problems with mental health and dealing with illness (17). These results highlight the difference in perception of illness between genders. Also, low education level and poor compliance with the treatment were correlated with lower HRQOL among people with asthma and COPD (19). A study conducted in Turkey showed that only about 60% of people with asthma and 50% of those with COPD had high compliance with the treatment. (20) Therefore, to

help people with asthma and COPD optimize their health, primary care physician should examine the adherence to therapy and provide clues as to how people with asthma and COPD can better adhere to treatment.

After matching on gender, age, education level and adherence to treatment, no difference in self-reported health was observed between people with asthma and COPD. Previous studies have shown that respiratory tract symptoms and their intensity most commonly affect patients' quality of life, regardless of the disease (21,22). Clinical manifestation of these two conditions largely overlap, therefore, differentiation between asthma and COPD is often problematic and misdiagnoses does occur (23). On the other hand, there are studies showing that people with COPD have worse HRQOL in comparison with those with asthma, but better in comparison with those with asthma-COPD overlap syndrome (ACOS) (24,25). In contrast, our study used the propensity score matching on gender, age, education level and adherence to the treatment, and the study included only patients from primary health care setting. These patients may have better disease control and there are fewer people with severe symptoms. Also, other generic HRQOL questionnaires such as the SF-36 were used to measure HRQOL and found that the change in 3-5 units was the threshold seen as a clinically significant improvement. This threshold was quite similar in both people with asthma and COPD (26).

We used a generic questionnaire to assess self-reported health of people with asthma and COPD, which enabled a comparison of patients with different chronic conditions within the same general population (2,7). Previous studies, using SF-36 to measure HRQOL, found that HRQOL of patients with asthma and COPD was 20 units lower compared with the general population (9, 10). This means that HRQOL of people with asthma and COPD should be monitored over time in order to detect certain specificities regarding the challenges and difficulties that are encountered on a daily basis.

In accordance with the results from literature, people in this study, in both groups, confirmed that their physical health was worse compared to other aspects of health (7, 21). Previous studies suggested that mobility disorder, restricted

obolelih od HOBP je u korelaciji sa pogoršanjem bolesti i češćom hospitalizacijom (29). *Brandl et al.* (30) su dokumentovali da otprilike jedna trećina pacijenata koji boluju od HOBP prijavljuje prisustvo simptoma depresije, dok 25% ima simptome anksioznosti. Takođe, *Leander et al.* (31) su u svojoj studiji pronašli jaku korelaciju između težih respiratornih simptoma i lošijeg psihološkog statusa osoba obolelih od astme i HOBP. Sa druge strane, pokazano je da je depresija najjača determinanta u specifičnom i opštem HRQoL kod osoba koje boluju od astme i HOBP i kao takva je važan medijator veze između HOBP i HRQoL (30-34). Korelacija između depresije i anksioznosti sa komponentom mentalnog zdravlja HRQoL bila je izuzetno istaknuta (33).

Snaga naše studije je prilično veliki uzorak korisnika usluga primarne zdravstvene zaštite koji su upareni na osnovu metoda mečovanja „propensity score“ i koji su imali potvrđenu dijagnozu astme i HOBP širom Republike Srbije. To nam omogućava da generalizujemo naše rezultate za celu populaciju pacijenata sa ovim stanjima u primarnoj zdravstvenoj zaštiti. S obzirom da astma i HOBP utiču na HRQoL pojedinaca (35), naši rezultati čine bazu za razumevanje problema osoba koje boluju od astme i HOBP, kao i aspekata bolesti koji treba da budu poboljšani.

Naša studija je imala nekoliko ograničenja. Ispitanici su popunjavali upitnike sami, što je podložno informacionoj pristrasnosti. Ispitanici su izabrani iz centara primarne zdravstvene zaštite, što znači da osobe sa ozbiljnijim formama nisu učestvovala u studiji. Ispitanici koji su izabrani iz centara primarne zdravstvene zaštite su pacijenti kod kojih je bolest uglavnom pod kontrolom, tako da nije bilo moguće proceniti uticaj ozbiljnih i nekontrolisanih formi ovih stanja na zdravstveni status koji su prijavljivali (39). Još jedno ograničenje se odnosi na dnevnu preopterećenost doktora medicine tako da nisu mogli da koriste prošireni upitnik koji bi obezbedio sveobuhvatne podatke o socijalnim i demografskim karakteristikama ispitanika, njihovim životnim navikama i karakteristikama bolesti koji bi doprineli subjektivnoj proceni zdravlja. Takođe, uticaj pojedinačnih simptoma nije uključen.

Zaključak

Nakon mečovanja po polu, starosnoj dobi, nivou obrazovanja i pridržavanju terapije, zdravstveni status koji su prijavljivali ispitanici oboleli od astme i HOBP bio je sličan. I u slučaju astme i HOBP san je najčešće bio narušen. Ovi podaci bi se mogli koristiti za dalje ispitivanje specifične osobine sna u cilju poboljšanja ciklusa spavanja kod osoba obolelih od astme i HOBP. Buduće studije bi mogle da koriste ove rezultate kao osnovu da se dalje ispituju razlike u zdravstvenom statusu koje prijavljuju osobe sa ozbiljnom i nekontrolisanom astmom i HOBP.

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Konflikt interesa

Autori su izjavili da nema konflikta interesa.

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activity and pain/discomforts represent the largest problems in patients with asthma and COPD (9, 10). These results should be kept in mind when defining the most common difficulties for people with asthma and COPD.

People with asthma and COPD in our study reported that presence of the disease mostly affected their sleep, while feelings of anxiety and depression were ranked second; the presence of pain was least frequently reported. Previous studies suggested that about 90% of people with asthma and 60% of people with COPD have problems with sleep and consequently with feeling tired and sleepy during day which, in turn, interferes with their daily functioning (27, 28). Poor sleep in people with COPD is correlated with the disease deterioration and more frequent hospitalization (29). Brandl et al. (30) documented that around one third of COPD patients report presence of depression symptoms, and 25% have symptoms of anxiety. Also, a study by Leander et al. (31) found a strong correlation between worse respiratory symptoms and poorer psychological status of people with asthma and COPD. On the other hand, depression was found as the strongest determinant disease-specific and general HRQOL in people with asthma and COPD and as such it is a very important mediator of the association between COPD and HRQOL (30-34). The correlation between depression and anxiety with mental health component of HRQOL was especially prominent (33).

The strength of our study is the fairly large sample of propensity score matched users of primary health care services with verified asthma and COPD throughout Serbia. This allows us to generalize our results to the entire population of primary health care patients with these conditions. As asthma and COPD affects HRQOL of individuals (35), our results provide the basis for understanding the problems of people with asthma and COPD as well as what aspects of the disease need to be improved and treated.

Our study had several limitations. Participants were filling in the questionnaires on their own, which is open to information bias. The selection of the participants was carried out from the primary health centers, which means that persons with more severe forms of the disease were omitted. The participants selected from the primary health care institutions are the patients in which the disease

is mostly under control, so it was not possible to estimate the impact of severe and uncontrolled forms of the condition on self-reported health (39). Another limitation is related to doctors' daily workload and thus, we were unable to use a more extensive questionnaire which could provide a comprehensive data on social and demographic characteristics of the participants, their life habits and disease characteristics which could contribute to self-rated health. Particularly, the impact of separate symptoms was not included.

Conclusions

After controlling for gender, age, education level and adherence to treatment self-reported health of people with asthma and people with COPD was similar. In both asthma and COPD sleeping was the most frequently impaired. These data could be used to further examine specific features of sleep in efforts to improve sleeping patterns among people with asthma and COPD. Future studies could use these results as the baseline to further explore the differences in self-reported health between people with severe and uncontrolled asthma and COPD.

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Competing interests

The authors declare no competing interests.

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