

Komorbiditeti i funkcionalna onesposobljenost hroničnog bola u donjem dijelu leđa

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Comorbidities and functional disability in chronic low back pain

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Sažetak

Uvod. Hronični bol u donjem dijelu leđa je sindrom uzrokovan različitim anatomske i funkcionalnim poremećajima lumbalne kičme i njene okoline koji traje duže od tri mjeseca. Kvalitet života obuhvata subjektivni doživljaj vlastitog stepena funkcionisanja, ali i objektivnu ocjenu zdravstvenog stanja.

Cilj rada. Procijeniti uticaj prisustva komorbiditeta na stepen funkcionalne onesposobljenosti kod pacijenata sa hroničnim bolom u donjem dijelu leđa.

Metod. Istraživanje je kao studija presjeka obavljeno u Domu zdravlja Krupa na Uni u periodu od 01.10.2016. do 01.09.2017. godine. Uzorak je činilo 115 slučajno odabranih pacijenata, 50 (43,48%) muškaraca i 65 (56,52%) žena, prosječne starosti $46 \pm 8,9$ godina. Instrument istraživanja bili su upitnici *Roland Morris Disability Questionnaire*, *Fear Avoidance Beliefs*, *Patient Health Questionnaire*, *Generalized Anxiety Disorder*, *Beck's Depression Inventory*, kao i posebno kreiran opšti upitnik za potrebe istraživanja. Obrada podataka vršena je standardnim statističkim metodima.

Rezultati. Statistički značajno povećanje funkcionalne nesposobnosti potvrđeno je kod sledećih komorbiditeta: hronični gastritis 28.7% ($p=0.006$), gojaznost ($BMI > 25$) 65.2% ($p=0.007$), alkoholizam 10.4% ($p=0.004$), nodozna struma štita 6.1% ($p=0.006$), anksioznost 73.7% ($p=0.035$) i depresija 37.4% ($p=0.042$).

Zaključak. Rano otkrivanje i odgovarajući pristup praćenja pridruženih bolesti kod osoba sa hroničnim bolom u donjem dijelu leđa u ambulantnoj porodičnoj medicini, značajno bi smanjili funkcionalnu onesposobljenost, troškove zdravstvene zaštite i gubitak prihoda zbog izgubljene produktivnosti.

Ključne riječi: komorbiditet, funkcionalna onesposobljenost, hroničan bol.

Abstract

Introduction: Chronic low back pain is a syndrome caused by different anatomical and functional disorders of the lumbar spine and its surroundings, lasting over three months. Life quality includes the subjective experience of self-functioning degree, as well as objective evaluation of the medical condition.

Objective: Survey objective was to evaluate the influence of the comorbidities on the functional disability level in patients with chronic low back pain.

Methods: The survey was performed as a cross-sectional study in Primary Health care Center Krupa na Uni from October 1st, 2016 to September 1st, 2017. The sample included 115 randomly chosen patients, 50 (43.48%) men and 65 (56.52%) women, of average age 46 ± 8.9 . Research instruments were Roland Morris Disability Questionnaire, Fear Avoidance Beliefs, Patient Health Questionnaire, Generalized Anxiety Disorder, Beck's Depression Inventory as well as specifically created questionnaire for this survey. Data processing was performed using standard statistical methods.

Results: Statistically significant functional disability increase was found in these comorbidities: chronic gastritis 28.7% ($p=0.006$), obesity ($BMI > 25$) 65.2% ($p=0.007$), alcoholism 10.4% ($p=0.004$), multinodular goiter 6.1% ($p=0.006$), anxiety 73.7% ($p=0.035$) and depression 37.4% ($p=0.042$).

Conclusion: Early detection and adequate treatment of the comorbidities in patients with low back pain in GP offices would drastically lower functional disability, health care expenses and income loss due to the lack of productivity.

Keywords: comorbidity, functional disability, chronic, pain

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Uvod

Bol u donjem dijelu leđa nije određena bolest, već sindrom koji može biti uzrokovan različitim anatomskim i funkcionalnim poremećajima lumbalne kičme i njene okoline^{1,2,3}.

Preko 80% ljudi u zreloj dobi svog života suočava se sa problemom bola u donjem dijelu leđa. Pogađa pripadnike oba pola i najčešće se javlja između 25-45 godina starosti. U primarnoj zdravstvenoj zaštiti 4-6% zaposlenih žena i 5-7% zaposlenih muškaraca javlja se u ambulantu porodične medicine zbog ovih tegoba. Po troškovima liječenja u Sjedinjenim Američkim Državama lumbalni sindrom je na trećem mjestu, iza malignih tumora i kardiovaskularnih bolesti. U odnosu na stepen funkcionalne onesposobljenosti, razlikujemo pacijente sa visokim stepenom funkcionalne onesposobljenosti, kod kojih su ograničene svakodnevne rutinske aktivnosti (okretanje u krevetu, oblačenje, obuvanje, ustajanje iz stolice, umivanje) i pacijente sa niskim stepenom funkcionalne aktivnosti koji imaju smanjenu radnu produktivnost bez narušavanja dnevnih aktivnosti^{1,2,3}.

Cilj rada

Istraživanje je imalo za cilj da procijeni efekat prisutnih komorbiditeta na stepen funkcionalne onesposobljenosti kod osoba sa hroničnim bolom u donjem dijelu leđa.

Metod

Način izbora ispitanika

Ispitivanje je kao studija presjeka sprovedeno u periodu od jedanaest mjeseci, od 01.10.2016. do 01.09.2017. godine. Ispitanici su registrovani u timu porodične medicine Javne zdravstvene ustanove Doma zdravlja Krupa na Uni. Anketirano je 115 pacijenata u toku redovnog rada u ambulantu.

Kriterijumi za uključivanje u istraživanje:

- doba između 20 i 79 godina,
- minimum osnovno obrazovanje, završena osnovna škola (radi boljeg razumijevanja upitnika),
- prisustvo hroničnog bola u donjem dijelu leđa (bol koji traje preko 120 dana),
- hronični bol u donjem dijelu leđa kao glavna tegoba koju pacijent navodi.

Kriterijumi za neuključivanje u istraživanje:

- starost iznad 79 godina,
- starost ispod 20 godina
- bol u donjem dijelu leđa koji traje kraće od 120 dana,
- psihotični poremećaji,
- maligna i uznapredovala hronična oboljenja
- upalne reumatske bolesti (ankilozirajući spondilitis i reumatoidni artritis),

Introduction

Low back pain is not a specific illness, but a syndrome which may be caused by different anatomical and functional disorders of the lumbar spine and its surroundings.^{1,2,3}

Over 80% of adults experience low back pain during their lives. It affects both genders equally and most frequently between the ages of 25-45. In primary health care, 4-6% of employed women and 5-7% of employed men visit GP offices due to this problem. The USA health care costs insight shows the lumbar syndrome takes the third place, just behind malignancies and cardiovascular diseases. Speaking of the levels of the functional disability, there are the patients with high levels of functional disability who have very the limited daily activities (turning in the bed, getting dressed, getting up from the chair, washing their faces) and the patients with the low level of functional activity who have low levels work productivity, but without the disturbance of the daily activities.

Objective

The objective was to evaluate the effect of concomitant comorbidities on the level of functional disability in patients with chronic back pain.

Methods

Participants selection

The survey was performed as a cross-sectional study in the period October 1st, 2016 to September 1st, 2017. The participants were the registered patients in Primary Health care Center, in Krupa na Uni. During their regular visits 115 patients were questioned.

Research inclusion criteria:

- Aged between 20-79
- Minimal basic education, finished primary school (due to the better understanding of the questionnaire)
- Presence of chronic low back pain (lasting over 120 days)
- Chronic low back pain as the patient's main complaint

Research exclusion criteria:

- Older than 79 years of age
- Younger than 20 years of age
- Low back pain lasting less than 120 days
- Psychotic illness
- Malignant and advanced chronic diseases
- Inflammatory rheumatic diseases (ankylosing spondylitis and rheumatoid arthritis)

- infekcije,
- svježije traume i operativni zahvati na lumbalnom dijelu kičmenog stuba.

Metod prikupljanja podataka

Podaci su prikupljeni na osnovu anamneze, fizikalnog pregleda, dostupne medicinske dokumentacije, popunjavanjem opšteg upitnika izrađenog za potrebe istraživanja, kao i specifičnih upitnika.

Opšti upitnik

Upitnik je uključivao podatke o *BMI (Body Mass Index)*, pušačkom statusu i pridruženim bolestima koje je upisivao ljekar porodične medicine.

Specifični upitnici

- RMDQ (Roland Morris Disability Questionnaire)*
Predstavlja najrelevantniji upitnik za određivanje stepena funkcionalne onesposobljenosti kod hroničnog bola u donjem dijelu leđa. Upitnik je sastavljen od 24 stavke pomoću kojih procjenjujemo stepen funkcionalne onesposobljenosti kroz šest oblasti: fizička aktivnost, spavanje/odmor, psihosocijalno funkcionisanje, ishrana, kućni poslovi, učestalost bolova. Mjerni opseg se kreće od 0 (nema invalidnosti) do 24 (teški invalidi). Skor niži od 15 tumači se kao *nizak stepen invalidnosti*, dok se skor $\geq$ od 15 tretira kao *visok stepen invalidnosti*⁴.
- FABQ (Fear Avoidance Beliefs)*
Upitnik koristimo u procjeni pacijentovog uvjerenja o štetnosti fizičke aktivnosti i njihovom izbjegavanju. Sastoji se od 16 pitanja koja, u zavisnosti od pacijentovog odgovora, bodujemo od 0 do 6. Prvih pet pitanja su dio Subskale fizičke aktivnosti (*FABQ-PA*), dok preostala pitanja predstavljaju Subskalu rada (*FABQ-W*); *FABQ-PA* ima raspon od 0 do 24 a *FABQ-W* od 0 do 42. Zbrajanjem *FABQ-PA* i *FABQ-W* dobijamo ukupni *FABQ skor*. Ukupni *FABQ skor* < 34 tumači se kao nizak stepen straha od fizičke aktivnosti, dok ukupni *FABQ skor* > 34 označava visok stepen straha od fizičke aktivnosti⁵.
- PHQ-15 (Patient Health Questionnaire)*
Upitnik sadrži 15 telesnih tegoba koje su pacijenti ocjenjivali sa ocjenom 0-2 u zavisnosti od toga koliko ih je svaka od njih ometala u svakodnevnom aktivnostima. Ukupan rezultat upitnika za žene je iznosio 0-30, a za muškarce 0-28. Rezultat 0-4 ukazivao je na minimalne somatske tegobe, 5-9 na niske, 10-14 na srednje i od 15 i više na ozbiljne somatske tegobe⁶.

- Infections
- Fresh traumas and operational procedures on the lumbar spine

Data gathering method

Data were gathered taking patient's health history, performing physical examination, using available medical data, filling in the general questionnaire made for this survey as well as specific questionnaires.

General questionnaire

This questionnaire contained data on BMI, smoking status and concomitant diseases, diagnosed earlier.

Specific questionnaires

- RMDQ (Roland Morris Disability Questionnaire)*
It is the most relevant questionnaire for the evaluation of the level of the functional disability in patients with low back pain. It contains 24 items which help evaluate the level of functional disability in six areas: physical activity, sleeping/rest, psychosocial functioning, nutrition, house chores, pain frequency. Measurement range varies from 0 (no disability) to 24 (severe disability). The score lower than 15 signifies „low level of disability“, while the score ≥ 15 signifies „high level of disability“⁴.
- FABQ (Fear Avoidance Beliefs)*
The questionnaire is used for the evaluation of the patient's beliefs on the harmfulness of physical activity and its avoidance. It contains 16 questions, which are graded from 0-6, depending on the patient's answer. First five questions are the part of the Physical activity subscale (*FABQ-PA*), while the rest of the questions represent the Work subscale (*FABQ-W*). *FABQ-PA* ranging from 0-24, while *FABQ-W* ranges from 0-42. Adding *FABQ-PA* and *FABQ-W* equals total *FABQ* score. Total *FABQ* score < 34 is interpreted as a low level of the fear of the physical activity and if it's higher than 34 it is considered as a high level of fear of the physical activity⁵.
- PHQ-15 (Patient Health Questionnaire)*
The questionnaire contains 15 somatic health issues, which are graded by patients, from 0-2, depending on how much it troubles them in their daily activities. A total score for women ranges between 0-30 and for men 0-25. Results from 0-4 indicate minimal somatic health issues. Those ranging from 5-9 were

- d. *GAD-7 (Generalized Anxiety Disorder)*
Upitnik koji se koristi u primarnoj zdravstvenoj zaštiti kako bi se procijenilo prisustvo generalizovanog anksioznog poremećaja. Sastoji se od sedam pitanja koja mjere težinu različitih stavki generalizovanog anksioznog poremećaja u toku posljednje dvije nedelje. U zavisnosti od pacijentovog odgovora, pitanja se boduju skorom od 0 do 3. Skor od 0 do 4 je karakterističan za zdrave osobe bez simptoma anksioznosti, a od 5 do 9 za pacijente sa blago izraženim simptomima anksioznosti. Ukoliko je skor između 10 i 14, simptomi anksioznosti su umjereno izraženi, a kod skora >15 simptom anksioznosti su značajno izraženi⁷.
- e. *BDI (Beck's Depression Inventory)*
Danas je u upotrebi druga revidirana verzija preporučena od strane APA (*American Psychiatric Association*). Sastoji se od 21. pitanja sa četiri ponuđena odgovora rangirana prema intenzitetu, koja se boduju ocjenom od 0 do 3. U zavisnosti od dobijenih rezultata, procjenjujemo težinu depresivnih simptoma. Zbir od 0 do 13 isključuje depresiju. Ako su rezultati od 14 do 19, postoje znaci blage depresije, od 20 do 28 znaci depresije su umjereni, a od 29 do 63 teška depresija^{8,9}.

Obrada i prezentacija podataka

Za analizu podataka korišćeni su deskriptivni statistički metodi: distribucija frekvencije obilježja, aritmetička sredina, standardna devijacija i procenti. Za utvrđivanje statističke značajnosti korišten je χ^2 -test nezavisnosti. Nivo značajnosti je podešen na 95% interval povjerenja. Rezultati su prikazani tekstualno, tabelarno i grafički, a kompletan rad je obrađen u tekst procesoru *Microsoft Word for Windows*.

Rezultati

Ispitivanje je obuhvatilo 115 pacijenata. Među njima je bilo 65 (56,52%) žena i 50 (43,48%) muškaraca, (Grafikon 1).

Najveći broj ispitanika imao je 40-59 godina, ukupno 75 (65,2%) pacijenata. Prosječna starost ispitivane populacije bila je $46 \pm 8,9$ godina, (Tabela 1).

Prekomjerna tjelesna uhranjenost ($BMI > 25,0$) potvrđena je kod 75 (65,2%) ispitanika, (Tabela 2).

also considered to have a low level of somatic health issues. Medium level of somatic health issues was scored by those ranging from 10-14, and those with the score over 15 were considered to have a high level of somatic health issues.⁶

- d. *GAD-7 (Generalized Anxiety Disorder)*
The questionnaire used in primary health care to evaluate the presence of general anxiety disorder. It contains seven questions measuring the severity of the different issues of general anxiety disorder during the previous two weeks. Depending on the patient's answers, they score 0-3. A total score of 0-4 is found in healthy people, without anxiety symptoms. Total score, ranging from 5-9 is found in patients with mild anxiety symptoms. If the score ranges from 10-14, it is considered moderate anxiety. Total scores of over 15 signify severe anxiety.⁷
- e. *BDI (Beck's Depression Inventory)*
Today, we are using the revised version, recommended by the APA (*American Psychiatric Association*). It contains 21 questions with four offered answers, ranging in their intensity, and score from 0-3. Depending on the results score, we evaluate the level of depression. A total of 0-13 excludes depression. Results ranging from 14-19 signify the presence of mild depression. A total score of 20-29 signifies mild and score of 29-63 severe depression.^{8,9}

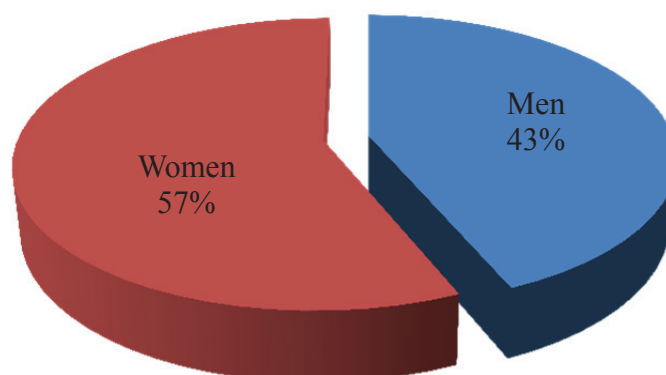
Data processing and presentation

Descriptive statistical methods were used for data analysis: frequency distribution, arithmetic mean, standard deviation and percentages. Statistical significance was determined using χ^2 -test for independence. The significance level is set to 95% confidence interval. The results are presented by text, tables, and figures and the complete essay text is processed with Microsoft Word for Windows.

Results

The research included 115 patients. There were 65 (56.52%) women and 50 (43.48%) men. (Graph 1) The majority of the participants were aged 40-59, which totals 75 (65.2%) patients. The average age of the participants was 46 ± 8.9 , (Table 1).

There were 75 (65.2%) patients who were overweight (BMI >25.0). (Table 2)



Graph 1. Participants` gender

Grafikon 1. Polna struktura ispitanika

Table 1. Participants` age structure

Tabela 1. Dobna struktura ispitanika

Age	Number (%) of the participants
20-39 years	20 (17.4%)
40-59 years	75 (65.2%)
60-79 years	20 (17.4%)

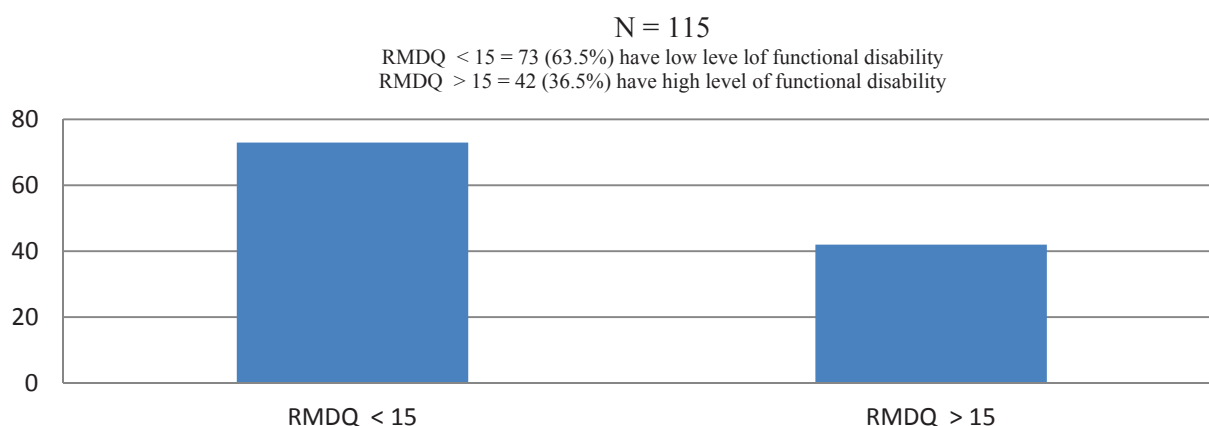
Table 2. Participants` nutritional status

Tabela 2. Stepen tjelesne uhranjenosti ispitanika

Nutritional status	Number (%) of the participants	
Underweight (BMI < 18.5)	0	
Normal weight (BMI 18.5 - 24.99)	40 (34.8%)	Total 40 (34.8 %) participants
Overweight (BMI 25.0 - 29.99)	55 (47.8%)	Total 75 (65.2 %) participants
I degree obesity (BMI 30.0 - 34.99)	14 (12.2%)	
II degree obesity (BMI 35.0- 39.9)	6 (5.2%)	
III degree obesity (BMI ≥ 40)	0	

Visok stepen funkcionalne onesposobljenosti utvrđen je kod 42 (36,5%) ispitanika, (Grafikon 2)

High level of the functional disability was found in 42 (36.5%) participants. (Graph 2)



Graph 2. Participants' functional disability according to RMDQ

Grafikon 2. Funkcionalna onesposobljenost ispitanika u istraživanju po upitniku RMDQ

Prisutni komorbiditeti ispitanika bili su: gojaznost (65.2%), depresija (37.4%), arterijska hipertenzija (29.6 %), hronični gastritis (28.7 %), dijabetes melitus tip 2 (10.4 %), alkoholizam (10.4 %), miokardiopatija (8.7 %), struma štitaste žlijezde (6,1%) i bronhijalna astma (4,3%), (Tabela 3).

Participants' concomitant comorbidities were: obesity (65.2 %), depression (37.4%), arterial hypertension (29.6 %), chronic gastritis (28.7 %), diabetes mellitus (10.4 %), alcoholism (10.4 %), myocardiopathy (8.7 %), goiter (6.1 %) and bronchial asthma (4.3 %). (Table 3)

Table 3. Participants' concomitant comorbidities

Tabela 3. Prisutni komorbiditeti ispitanika

Participants' comorbidity	Number (%) of the participants
Anxiety	85 (73.7 %)
Depression	43 (37.4 %)
Arterial hypertension	39 (29.6 %)
Myocardiopathy	10 (8.7 %)
Goiter	7 (6.1 %)
Chronic gastritis	33 (28.7 %)
Bronchial asthma	5 (4.3 %)
Diabetes mellitus ab insulino independens	12 (10.4 %)
Alcoholism	12 (10.4 %)

Od 25 (21,8%) učesnika u istraživanju sa blago izraženim depresivnim tegobama, 16 (64,0%) je imalo visok stepen funkcionalne onesposobljenosti a 9 (36,0%) niži stepen. Od 7 (6,0%) ispitanika sa umjerenim depresivnim tegobama, 4 (57,1%) je imalo visok stepen funkcionalne one-

Out of 25 (21.8%) participants with mild depression, 16 (64.0%) had a high level of functional disability, while 9 (36.0%) had a lower level. Out of 7 (6.0%) participants with moderate depression, 4 (57.1%) had a very high level of functional disability, and 3 (42.9%) had a lower level. Among 11

sposobljenosti a 3 (42.9%) niži stepen. Među 11 (9,6%) ispitanika sa ozbiljnim depresivnim tegobama, 8 (7,7%) je imalo visok stepen funkcionalne onesposobljenosti a 3 (27.3%) ispitanika niži stepen. Intenzitet depresivnih tegoba pokazuje statistički značajan uticaj na stepen funkcionalne onesposobljenosti ($p=0.042716$), (Grafikon 3).

(9.6%) participants with severe depression 8 (72.7%) had a high level of functional disability and 3 (27.3%) had a low level. The intensity of the depressive symptoms influences significantly the level of functional disability ($p=0.042716$). (Graph 3)

BDI = 14 - 19 = 25 (27.1%) light depression symptoms

RMDQ < 15 = 9 (36.0 %) with low level of functional disability

RMDQ > 15 = 16 (64.0%) with high level of functional disability

BDI = 20 - 28 = 7 (6.1 %) moderate depression symptoms

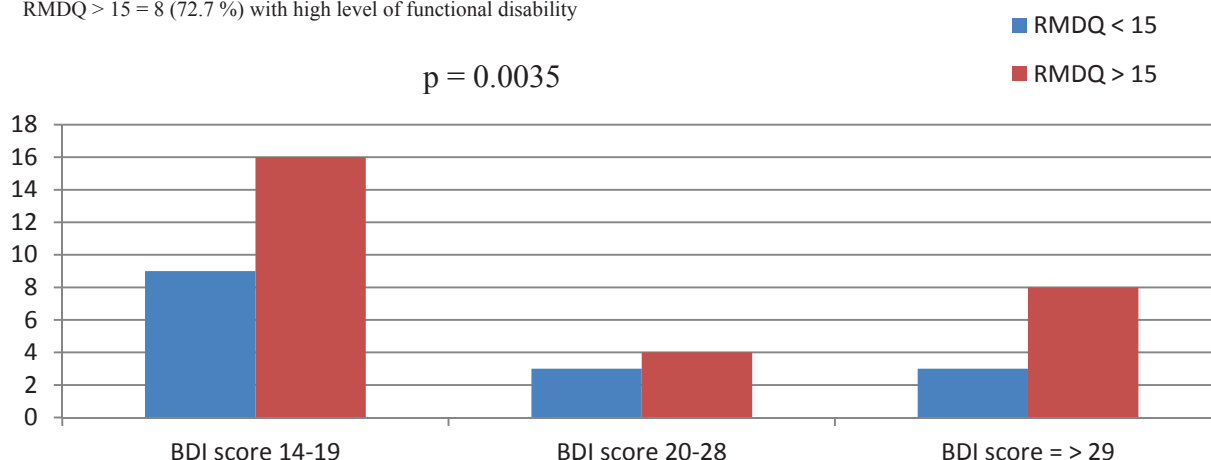
RMDQ < 15 = 3 (42.9 %) with low level of functional disability

RMDQ > 15 = 4 (57.1 %) with high level of functional disability

BDI > = 29 = 11 (9.6 %) severe depression symptoms

RMDQ < 15 = 3 (27.3 %) with low level of functional disability

RMDQ > 15 = 8 (72.7 %) with high level of functional disability



Graph 3. Interrelation between the intensity of depressive symptoms according to the Beck's Depression Inventory index and functional disability according to the Roland Morris Disability Questionnaire index

Grafikon 3. Međusobni odnos intenziteta depresivnih tegoba po Beck's Depression Inventory indeksu i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

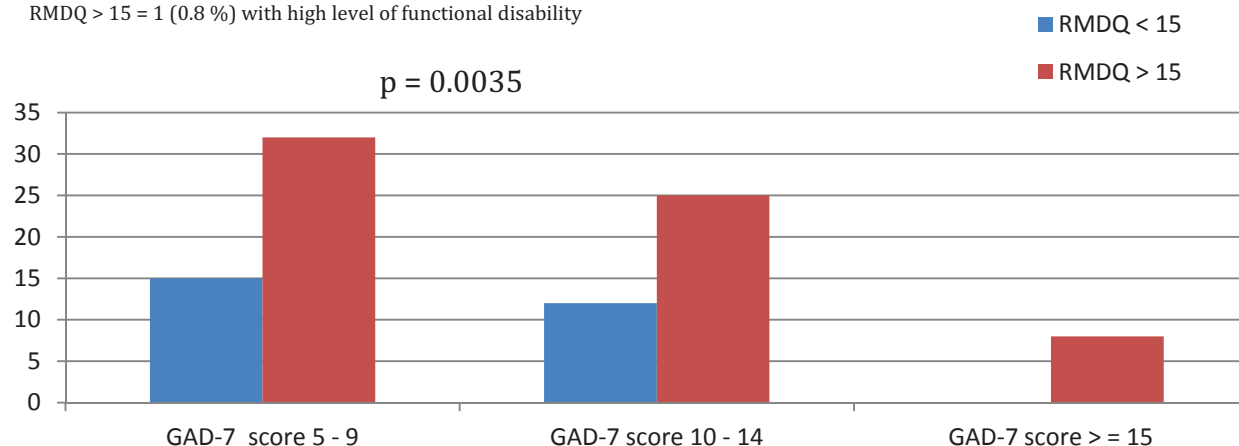
Od 47 (40,9%) ispitanika sa blago izraženim anksioznim tegobama, 15 (31,9%) je imalo visok stepen funkcionalne onesposobljenosti, a 32 (68,1%) niži stepen. Od 37 (32,2%) ispitanika sa umjerenim anksioznim tegobama, 25 (67,6%) je imalo visok stepen funkcionalne onesposobljenosti, a 12 (32,4%) niži stepen funkcionalne onesposobljenosti. Jedan (0,8%) učesnik u istraživanju sa ozbiljnim anksioznim tegobama imao je visok stepen funkcionalne onesposobljenosti (100%). Intenzitet anksioznih tegoba pokazuje statistički značajan uticaj na stepen funkcionalne onesposobljenosti ($p=0,035689$), (Grafikon 4).

Out of 40 (40.7%) participants with mild anxiety, 15 (31.9%) had a high level of functional disability, while 32 (68.1%) had low levels. Out of 37 (32.2%) participants with moderate anxiety, 25 (67.6%) had very high level of functional disability, while 12 (32.4%) had lower levels. One participant (0.8%) had severe anxiety and also a high level of functional disability (100%). The intensity of the anxiety symptoms significantly influences the level of functional disability ($p=0.035689$). (Graph 4)

GAD - 7 = 5 - 9 = 47 (40.9 %) light depression symptoms
 RMDQ < 15 = 15 (31.9 %) with low level of functional disability
 RMDQ > 15 = 32 (68.1%) with high level of functional disability

GAD - 7 = 10 - 14 = 37 (32.2 %) moderate depression symptoms
 RMDQ < 15 = 12 (32.4 %) with low level of functional disability
 RMDQ > 15 = 25 (67.6 %) with high level of functional disability

GAD - 7 > = 15 = 1 (0.8 %) severe depression symptoms
 RMDQ < 15 = 0 (0.0 %) with low level of functional disability
 RMDQ > 15 = 1 (0.8 %) with high level of functional disability



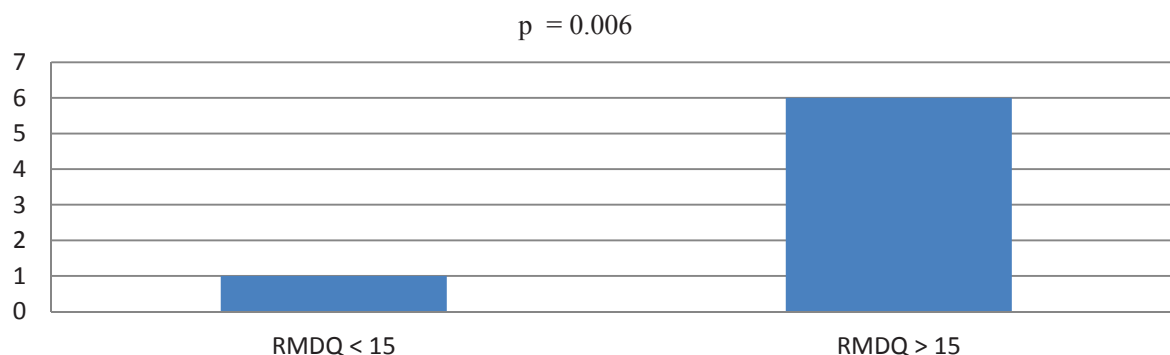
Graph 4. Interrelations between the intensity of anxiety symptoms according to the Generalized Anxiety Disorder index and functional disability according to the *Roland Morris Disability Questionnaire index*

Grafikon 4. Međusobni odnos intenziteta anksioznih tegoba po Generalized Anxiety Disorder indeksu i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

Struma nodosa glandulae thyreoideae potvrđena je kod 7 (6,1%) ispitanika, od kojih je 6 (85,7%) imalo visok stepen funkcionalne onesposobljenosti, dok je jedan (14,3%) ispitanik imao niži stepen funkcionalne onesposobljenosti. Postoji statistički značajan uticaj prisustva *strume nodosae glandulae thyreoideae* na stepen funkcionalne onesposobljenosti ($p=0.0067333$), (Grafikon 5).

Multinodular goiter was found in 7 (6.1%) participants, of whom 6 (85.7%) had a high level of functional disability, and 1 (14.3%) had a lower level. There is a statistically significant influence of nodular goiter on the level of the functional disability ($p=0.0067333$). (Graph5)

RMDQ < 15 = 1 (14.3%) with low level of functional disability
 RMDQ > 15 = 6 (85.7%) with high level of functional disability

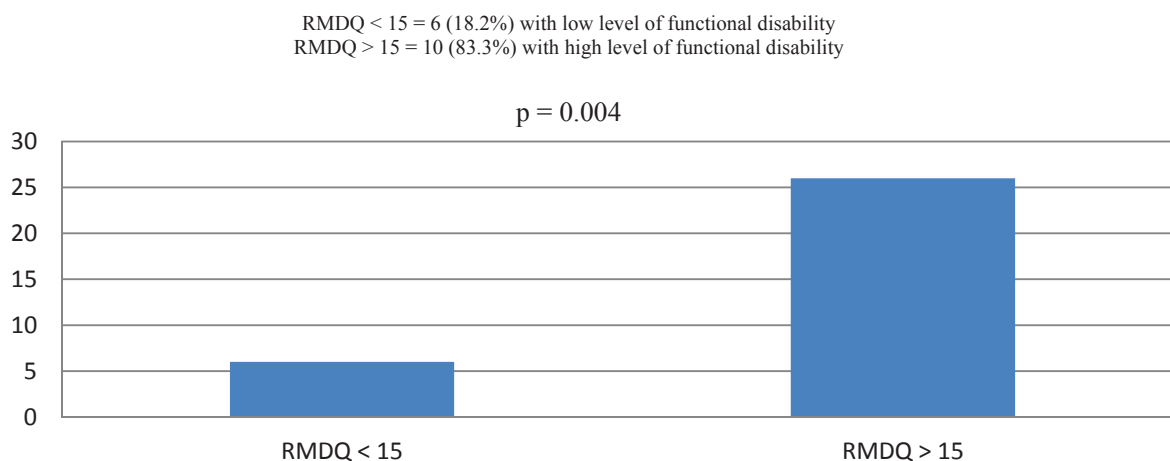


Graph 5. Interrelations between nodular goiter and functional disability according to the *Roland Morris Disability Questionnaire index*

Grafikon 5. Međusobni odnos prisustva Strumae nodosae glandulae thyreoideae i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

Od 33 (28,7%) ispitanika sa potvrđenim hroničnim gastritisom, 26 (81,8%) je imalo visok stepen funkcionalne onesposobljenosti, dok je kod 6 (18,2%) ispitanika registrovan niži stepen funkcionalne onesposobljenosti. Postoji statistički značajan uticaj prisustva hroničnog gastritisa na stepen funkcionalne onesposobljenosti ($p=0.004$), (Grafikon 6).

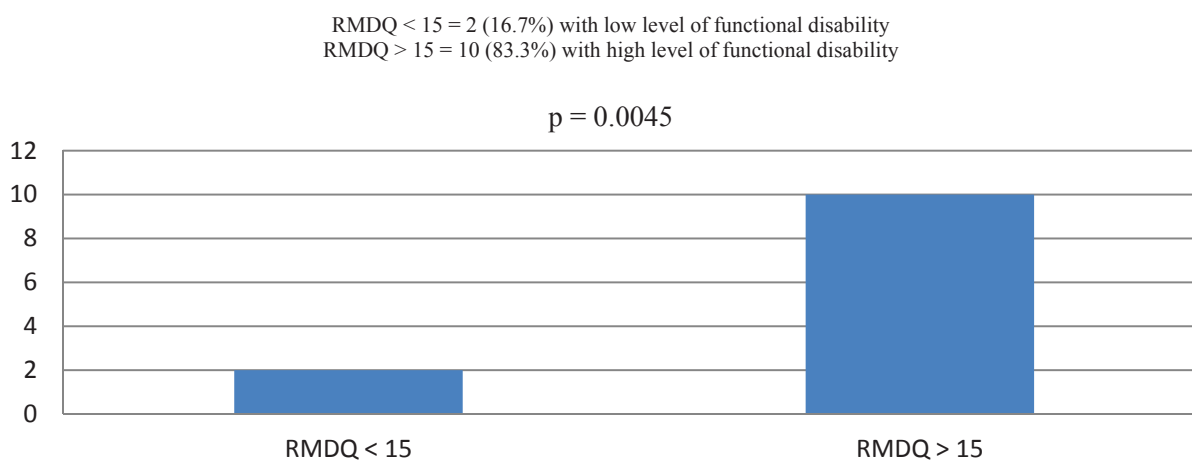
Out of 33 (28.7%) participants with diagnosed chronic gastritis, 26 (81.8%) had a high level of functional disability, and 7 (18.2%) had lower levels. There is a statistically significant influence of chronic gastritis on the level of the functional disability ($p=0.004$). (Graph 6)



Graph 6. Interrelations between chronic gastritis and functional disability according to the Roland Morris Disability Questionnaire index
Grafikon 6. Međusobni odnos prisustva *Gastritis chronica* i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

Od 12 (10,4%) ispitanika sa dijagnozom alkoholizma, 10 (83,3%) je imalo visok stepen funkcionalne onesposobljenosti, dok su 2 (16,7%) ispitanika imala niži stepen funkcionalne onesposobljenosti. Postoji statistički značajan uticaj prisustva alkoholizma na stepen funkcionalne onesposobljenosti ($p=0.004572$), (Grafikon 7).

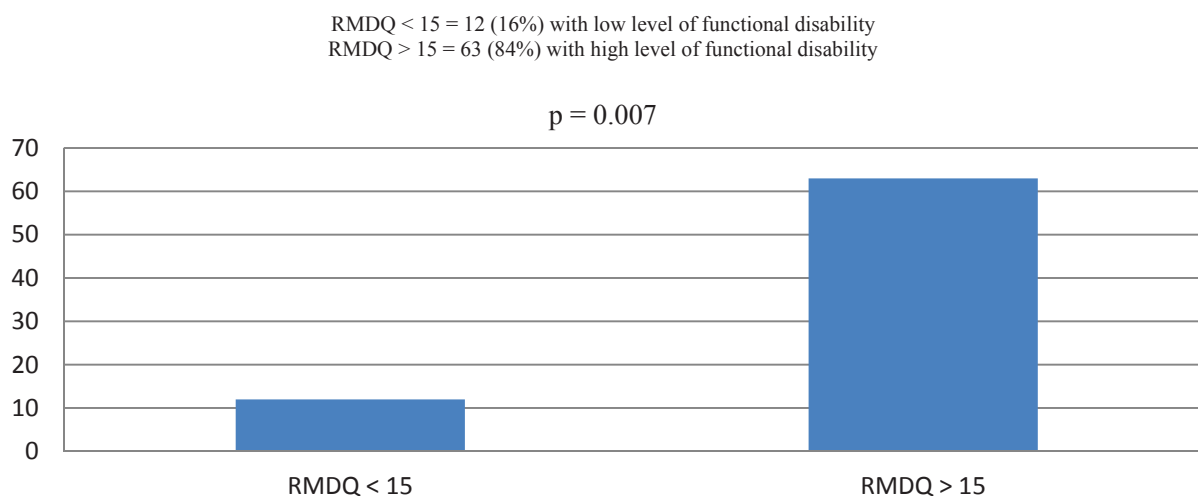
Out of 12 (10.4%) participants with diagnosed alcoholism, 10 (83.3%) had a high level of functional disability, while 2 (16.7%) had lower levels. There is a statistically significant influence of alcoholism on the level of functional disability ($p=0.004572$). (Graph 7)



Graph 7. Interrelations between alcoholism and functional disability according to the Roland Morris Disability Questionnaire index
Grafikon 7. Međusobni odnos prisustva alkoholizma i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

Od 75 (65,2%) ispitanika sa poremećajem tjelesne uhranjenosti, 63 (84,0%) su imala visok stepen funkcionalne onesposobljenosti, a 12 (16,0%) niži stepen. Postoji statistički značajan uticaj poremećaja tjelesne uhranjenosti na stepen funkcionalne onesposobljenosti ($p=0,007$), (Grafikon 8).

Out of 75 (65.2%) participants with nutritional disorders, 63 (84.0%) had a high level of functional disability, while 12 (16.0%) had lower levels. There is a statistically significant influence of nutritional disorders on the level of functional disability ($p=0.007$). (Graph 8)



Graph 8. Interrelations between the level of nutritional status and functional disability according to the Roland Morris Disability Questionnaire index

Grafikon 8. Međusobni odnos stepena tjelesne uhranjenosti i funkcionalne onesposobljenosti po Roland Morris Disability Questionnaire indeksu

Cigarete su pušila 42 (36,5%) ispitanika, od kojih je 28 (66,7%) imalo visok stepen funkcionalne onesposobljenosti, a 14 (33,3%) ispitanika niži stepen funkcionalne onesposobljenosti. Postoji statistički značajan uticaj pušenja na stepen funkcionalne onesposobljenosti ($p=0,00596$).

There were 42 (36.5%) smokers, of whom 28 (66.7%) had a high level of functional disability, and 14 with (33.3%) lower levels. There is a statistically significant influence of smoking on the level of functional disability ($p=0.00596$).

Od 16 (28,3%) ispitanika sa povećanim strahom od fizičke aktivnosti, 15 (93,8%) je imalo visok stepen funkcionalne onesposobljenosti, a jedan (6,2%) niži stepen funkcionalne onesposobljenosti. Postoji statistički značajan uticaj intenziteta straha od fizičke aktivnosti i njenog izbegavanja, na stepen funkcionalne onesposobljenosti ($p=0,003613$).

Out of 16 (28.3%) participants with increased fear of physical activity, 15 (93.8%) had a high level of functional disability, and 1 (6.2%) lower level. There is a statistically significant influence of the intensity of fear of physical activity and its avoidance on the level of functional disability ($p=0.003613$).

Od 39 (29,6%) učesnika sa dijagnostikovanom arterijskom hipertenzijom, 16 (42,0%) je imalo visok stepen funkcionalne onesposobljenosti, a 20 (58%) niži stepen funkcionalne onesposobljenosti. Nije uočen statistički značajan uticaj arterijske hipertenzije na stepen funkcionalne onesposobljenosti ($p=0.89735$).

Out of 39 (29.6%) participants with diagnosed arterial hypertension, 16 (42.0%) had higher levels of functional disability, while 20 (58%) had lower levels. There was no statistically significant influence of arterial hypertension on the level of functional disability ($p=0.89735$).

Od 10 (8,7%) učesnika u istraživanju sa miokardiopatijom, 4 (40%) je imalo visok stepen funkcionalne onesposobljenosti a 6 (60%) ispitanika niži stepen. Nije uočen statistički značajan uticaj miokardiopatije na stepen funkcionalne onesposobljenosti ($p=0.7863$).

Out of 10 (8.7%) participants with myocardopathy, 4 (40%) had a high level of functional disability, and 6 (60%) had lower levels. There was no statistically significant influence of myocardopathy on the level of functional disability ($p=0.7863$).

Od 12 (10,4%) ispitanika sa dijagnostikovanim dijabetes melitusom tip 2, 5 (41,7%) je imalo visok stepen funkcio-

Out of 12 (10.4%) participants with diagnosed diabetes mellitus, 5 (41.7%) had a high level of functional disability, while 7 (58.3%) had low levels. There was no statistically significant influence of diabetes mellitus on the level of functional disability ($p=0.682$).

nalne onesposobljenosti, a 7 (58,3%) ispitanika niži stepen. Nije uočen statistički značajan uticaj dijabetes melitusa tip 2 na stepen funkcionalne onesposobljenosti ($p=0.682$).

Od 5 ispitanika (4,3%) sa verifikovanom bronhijalnom astmom, 2 (40,0%) je imalo visok stepen funkcionalne onesposobljenosti, dok su 3 (60,0%) ispitanika imala niži stepen. Nije uočen statistički značajan uticaj bronhijalne astme na stepen funkcionalne onesposobljenosti ($p=0.981$).

Od 55 (47,8%) ispitanika sa niskim intenzitetom somatskih tegoba, 37 (32,3%) je imalo niži stepen funkcionalne onesposobljenosti, dok je 28 (32,7%) imalo visok stepen funkcionalne onesposobljenosti. Umjereno izražene somatske tegobe imalo je 37 (32,2%) ispitanika, od kojih 31 (85%) sa nižim stepenom funkcionalne onesposobljenosti a 6 (15%) sa visokim stepenom funkcionalne onesposobljenosti. Jedan ispitanik (0,1%) je imao ozbiljne somatske tegobe i kod njega je dijagnostikovao visok stepen funkcionalne onesposobljenosti. Nije utvrđen statistički značajan uticaj intenziteta somatoformnih poremećaja na stepen funkcionalne onesposobljenosti ($p=0.3338$).

Diskusija

Istraživanjem se došlo do zaključka da je intenzitet depresivnih tegoba u saglasnosti sa stepenom funkcionalne onesposobljenosti ($p=0.042716$). Istraživanja u Japanu, Francuskoj i Velikoj Britaniji takođe su potvrdila hipotezu o negativnom uticaju depresije na funkcionalnu onesposobljenost pacijenata sa hroničnim bolom u leđima^{10,11,12}. Smatra se da je glavni uzrok depresije kod lica sa hroničnim bolom u donjem dijelu leđa, smanjena produktivnost i neadekvatan finansijski status. Jak intenzitet bola vodi ka nesanici i prekomjernoj upotrebi lijekova, koji potenciraju nastanak depresije.

Depresija kao komorbiditet hroničnog lumbalnog bola, vodi ka povećanom korišćenju zdravstvenih usluga i, samim tim, povećanju troškova zdravstvene zaštite^{10,11,12}.

Naše istraživanje pokazuje da anksioznost statistički značajno povećava stepen funkcionalne onesposobljenosti ($p=0.035689$). Ne može se sa sigurnošću odgovoriti na pitanje da li je anksioznost faktor rizika ili posledica hroničnog bola u donjem dijelu leđa. Anksioznost kao komorbiditet hroničnog bola u donjem dijelu leđa, češće se javlja kod lica nižeg obrazovanja i većeg stepena funkcionalne onesposobljenosti^{10,13}.

Ispitanici sa dijagnostikovanim nodoznom strumom štitaste žlijezde imali su statistički značajno veći stepen funkcionalne onesposobljenosti ($p=0.0067333$). Kod bolesnika sa hroničnim bolom u donjem dijelu leđa česte su niske vrijednosti FT_4 i/ili FT_3 . Smanjen nivo hormona štitaste žlijezde dovodi do mitohondrijalne disfunkcije, smanjenog stvaranja ćelijske energije (kao ATP), povećane potrošnje kiseonika, te otežanog izduživanja i separacije mišićnih vlakana neophod-

Out of 5 (4.3%) participants with diagnosed bronchial asthma, 2 (40%) had a high level of functional disability, while 3 (60%) had low levels. There was no statistically significant influence of bronchial asthma on the level of functional disability ($p=0.981$).

Out of 55 (47.8%) participants with somatic health issues of low intensity, 37 (32.3%) had a lower level of functional disability, while 28 (32.7%) had a high level. Moderate somatic health issues were found in 37 (32.2%) participants, out of whom 31 (85%) had lower levels of functional disability, while 6 (15%) had high levels. One participant (0.1%) had very severe somatic health issues and a very high level of functional disability. There was no statistically significant influence of the somatic health issues on the level of functional disability ($p=0.3338$).

Discussion

We've concluded the intensity of depression symptoms correlates with the level of functional disability ($p=0.042716$). The researches from Japan, France, and Great Britain also confirm the hypothesis of the negative impact of depression on functional disability in patients with chronic low back pain^{10,11,12}. Low productivity and inadequate finances are considered the main causes of depression in people with chronic low back pain. High pain intensity leads to insomnia and drug overuse, which may also instigate depression.

Depression, as a comorbidity in chronic low back pain, leads to the more frequent use of health services and inevitably greater health care costs^{10,11,12}.

Our research confirmed anxiety, with statistical significance, increases the level of functional disability ($p=0.035689$). It is not quite clear whether the anxiety is the risk factor or the consequence of the chronic low back pain. Anxiety, as comorbidity, in chronic low back pain is more frequently found in patients with lower education and a higher level of functional disability^{10,13}.

Participants with diagnosed nodular goiter had a statistically significantly higher level of functional disability ($p=0.0067333$). Low levels of FT_4 and/or FT_3 are often found in patients with chronic low back pain. Low level of thyroid hormones leads to mitochondrial dysfunction, reduced production of cell energy (i.e ATP), increased oxygen consumption, which makes for the harder elongation and separation of muscular filaments necessary for the muscle relaxation. Increased muscular tension is a trigger for the occurrence of chronic pain.¹⁴

nih za mišićnu relaksaciju. Višak napetosti mišića predstavlja okidač za pojavu hroničnog bola¹⁴.

Ispitanici sa hroničnim gastritisom imali su statistički značajno veći stepen funkcionalne onesposobljenosti ($p=0.004$). Mogući faktori koji bi mogli objasniti značajan uticaj hroničnog gastritisa su: bol kroz visceralno-somatsku konvergenciju, izmjenjena percepcija bola, povećano opterećenje kičme kod defekacije¹⁵.

Zloupotreba alkohola od strane ispitanika imala je za posljedicu statistički značajno povećanje stepena funkcionalne onesposobljenosti ($p=0.004572$). Podaci iz literature ukazuju na činjenicu da prekomjerno korišćenje alkohola može uzrokovati hronični bol u donjem dijelu leđa, ili povećati funkcionalnu onesposobljenost kod već postojećeg bola. S druge strane, hroničan bol u donjem dijelu leđa može se javiti kao izvor alkoholne zavisnosti, posebno kod pacijenata koji su odlučili da alkoholom zamijene lijekove za terapiju dorzalgijske. Važno je napomenuti da se povezanost javlja samo u slučajevima zloupotrebe, odnosno prekomjerne konzumacije alkoholnih pića. Prekomjerna konzumacija alkohola izaziva isušivanje diska, što predstavlja prvi korak u procesu degenerativne bolesti diska. Zloupotreba alkohola ima značajnu ulogu u pojavi osteoartritisa¹⁶.

Ispitanici sa prekomjernom tjelesnom težinom imali su statistički značajno veći stepen funkcionalne onesposobljenosti ($p=0.007$). Gojaznost povećava mehaničko opterećenje na donji dio kičmenog stuba i pogoduje nastanku strukturnih oštećenja lumbosakralnog dijela kičme.

Poremećaj tjelesne uhranjenosti ima značajnu ulogu u nastanku somatoformnih tegoba, koje doprinose povećanoj funkcionalnoj onesposobljenosti kod hroničnog lumbalnog bola¹⁷. Pušenje je statistički značajno povećavalo stepen funkcionalne onesposobljenosti ispitanika ($p=0.00596$). Nikotin ima negativan efekat na ćelularni metabolizam i bujanje osteoblasta, smanjuje sintezu kolagena. Pušači imaju povećanu učestalost degenerativnih promjena na intervertebralnom disku. Pušenje dovodi do smanjene perfuzije u kičmenom tkivu, što ima za posljedicu anoksiju tkiva, te povećanu sklonost za mehaničke ozljede tokom stresa. Kod pušača postoji visok stepen psiholoških poremećaja poput anksioznosti i depresije, koji su usko povezani sa hroničnim bolom. Istraživanja koja su sprovedena od strane eksperata u Rusiji takođe govore u prilog snažne povezanosti pušenja i hroničnog bola u donjem dijelu leđa¹⁸.

Strah od fizičke aktivnosti ispitanika je statistički značajno povećavao stepen funkcionalne onesposobljenosti ispitanika ($p=0.003613$). Kao posljedica dolazi do smanjene funkcije muskuloskeletnog sistema, povećanja tjelesne težine, stvaranja osjećaja bespomoćnosti, održavanja hroničnih bolova i povećanja funkcionalne onesposobljenosti.

Pogoršanje straha i eventualno stvaranje fobičnog stanja kod hroničnog bola u donjem dijelu leđa, može da dovede do značajne invalidnosti^{19,20}.

Participants with chronic gastritis had a significantly higher level of functional disability ($p=0.004$). Possible explanations could be: visceral-somatic pain convergence, modified pain perception, increased spine strain during defecation.¹⁵

Alcohol abuse resulted in a significantly elevated level of functional disability ($p=0.004572$). Literature data show alcohol abuse may cause chronic low back pain or increase the level of functional disability in patients who are already in pain. On the other hand, chronic low back pain may be the cause of alcohol abuse, especially in patients who decided to replace their dorsalgia medications with alcohol. It is important to emphasize the connection occurs only in the cases of alcohol abuse (overuse). Alcohol overuse drains the discs intervertebrales which is the first step in the process of degenerative disc disease. Alcohol abuse has an important role in osteoarthritis onset.¹⁶

Overweight participants had a statistically significantly higher level of functional disability ($p=0.007$). Obesity increases mechanical spinal strain and may cause structural damage to the lumbar spine. The nutritional disorder has an important role in somatic symptoms onset and it leads to higher functional disability in chronic low back pain.¹⁷

Smoking statistically significantly increased the level of functional disability ($p=0.00596$). Nicotine harms cellular metabolism and osteoblast proliferation, decreases the collagen synthesis. Smokers have a higher incidence of degeneration of intervertebral discs. Smoking causes reduced perfusion of the spinal tissue, which leads to anoxia of the tissue and an increased predilection for mechanical trauma during strain. There is a high incidence of psychological disorders, such as anxiety and depression, in smokers, which is inextricably linked to chronic pain. Researches performed by Russian experts also speak of a tight connection between smoking and chronic low back pain.¹⁸

Fear of physical activity in some participants has statistically significantly increased the level of functional disability ($p=0.003613$). It led to a decrease in the musculoskeletal functioning, weight gain, caused the feeling of helplessness in some patients, a continuation of chronic pain and an increase in functional disability. Fear deterioration and possible phobia onset in chronic low back pain may result in severe disability.^{19,20}

This research didn't find a statistically significant connection between arterial hypertension and the level of functional disability, in our participants ($p=0.89735$). Arterial hypertension increases the pain threshold in acute pain. This relation changes with the duration of hypertension, use of antihypertensive drugs, and extended pain duration, so in chronic low back pain, there is a proportional relation between pain intensity and the level of blood pressure.²¹

Istraživanjem nije potvrđen statistički značajan uticaj arterijske hipertenzije na stepen funkcionalne onesposobljenosti ispitanika ($p=0,89735$). Arterijska hipertenzija povećava bolni prag kod akutnog bola. Ovaj odnos se mijenja sa dužinom trajanja hipertenzije, korišćenjem antihipertenzivnih lijekova i produženim trajanjem bola, tako da kod hroničnog bola u donjem dijelu leđa postoji proporcionalan odnos intenziteta bola i visine krvnog pritiska²¹.

Prisustvo miokardijopatije nije statistički značajno uticalo na povećanje stepena funkcionalne onesposobljenosti ispitanika ($p=0,7863$). Podaci iz literature navode mogućnost da miokardijopatija kao komorbiditet hroničnog bola u donjem dijelu leđa, povećava funkcionalne onesposobljenosti. Postoji nekoliko mehanizama zajedničkih za hronični bol u donjem dijelu leđa i miokardijopatiju: povišene vrijednosti kortizola, simpatičko-parasimpatičke neravnoteže, centralne senzibilizacije (proinflammatory citokina), prisustvo anksioznosti, depresije i gojaznosti, pojava aterosklerotskih promjena na koronarnim krvnim sudovima i lumbalnim arterijama.

Dijabetes melitus tip 2 nije statistički značajno povećavao stepen funkcionalne onesposobljenosti ispitanika ($p=0,682$). Istraživanja navode da dijabetes mijenja mehaničke karakteristike tkiva, što ima za posljedicu povećane mogućnosti prolapsa diska, a time i mehanički bol u donjem dijelu leđa. Pacijenti sa dijabetesom obično su gojazni, često imaju pridruženu anksioznost i/ili depresiju, poremećaj sna. Svi ovi činioci mogu da objasne pozitivnu korelaciju između hroničnog bola u leđima i dijabetesa koje nalazimo u literaturi^{23,24}.

Bronhijalna astma nije statistički značajno povećavala stepen funkcionalne onesposobljenosti ispitanika ($p=0,981$). Istraživanja dokazuju da osobe koje imaju hroničan bol u donjem dijelu leđa, tokom vremena razviju disfunkciju u respiratornom kapacitetu, jer gube odgovarajuću podršku muskulature donjeg dijela leđa prilikom inspirijuma, te imaju veću mogućnost nastanka respiratornih poremećaja muskulature abdomena i mišića donjeg dijela leđa²⁵.

Istraživanje nije potvrdilo statistički značajan uticaj intenziteta somatskih tegoba na stepen funkcionalne onesposobljenosti ($p=0,3338$). Podaci iz literature navode sposobnost somatoformnih poremećaja da kroz proces centralne senzibilizacije dovode do pojačane osjetljivosti na bol (engl. *hyperalgesia*), koja može biti prisutna i nakon saniranja patološkog procesa^{10,13}.

Zaključak

Intenzivna anksioznost dovodi do povećanja funkcionalne onesposobljenosti. Intenzitet depresivnih tegoba je u saglasnosti sa stepenom funkcionalne onesposobljenosti. Hronični gastritis i nodozne strume štitaste žlijezde dovode do povećanja funkcionalne onesposobljenosti.

Myocardopathy didn't statistically significantly influence the increase of the level of the functional disability in our participants ($p=0.7863$). Literature data imply the possibility of myocardopathy, as a comorbidity in chronic low back pain, increasing the level of functional disability. There are several mechanisms in common for chronic low back pain and myocardopathy: high cortisol levels, sympathetic-parasympathetic disbalance, central sensibilization (pro-inflammatory cytokines), presence of anxiety, depression, and obesity, the onset of atherosclerotic changes in coronary blood vessels and lumbar arteries.²²

Diabetes mellitus didn't statistically significantly influence the level of functional disability in our patients ($p=0.682$). The researches imply diabetes changes mechanical tissue characteristics, which may lead to possible disk prolapse, and inevitably to the mechanical pain in the lower back. Diabetic patients are often obese, have concomitant anxiety and/or depression, a sleeping disorder. All of these elements may account for the positive correlation between chronic low back pain and diabetes mellitus found in the literature.^{23,24}

Bronchial asthma didn't statistically significantly increase the level of functional disability in our participants ($p=0.981$). Some research shows that patients with chronic low back pain eventually develop a certain level of respiratory dysfunction because they are losing adequate muscular support of the lower back during inhaling.²⁵

Our research didn't verify the statistically significant increase in the level of the functional disability in correlation with the intensity of the somatic symptoms ($p=0.3338$). Literature data show somatic disorders lead to increased sensitivity to pain through the process of central sensibilization (*hyperalgesia*), and it may be present even after the improvement of the pathological process.^{10,13}

Conclusions

Intensive anxiety leads to an increase in functional disability. Depression intensity correlates with the level of functional disability. Chronic gastritis and nodular goiter increase the level of functional disability. Smoking, alcohol abuse and obesity increase functional disability.

Pušenje, zloupotreba alkohola i prekomjerna tjelesna uhranjenost povećavaju funkcionalnu onesposobljenost.

Intenzivan strah od fizičke aktivnosti i izbjegavanje fizičke aktivnosti povećavaju funkcionalnu onesposobljenost. Intenzitet somatoformnih tegoba ne utiče na stepen funkcionalne onesposobljenosti.

Miokardiopatija, bronhijalna astma i dijabetes nisu u korelaciji sa stepenom funkcionalne onesposobljenosti.

Preporuke

Postoji potreba da se izabrani doktori porodične medicine, kroz stalno medicinsko obrazovanje, upoznaju sa značajnom ulogom komorbiditeta u definisanju stepena funkcionalne onesposobljenosti kod pacijenata sa hroničnim bolom u donjem dijelu leđa.

Od velike važnosti je upoznavanje ljekara sa standardizovanim upitnicima za detekciju anksioznosti, depresije, straha od fizičke aktivnosti i njenom izbjegavanju, imajući u vidu njihov doprinos hronifikaciji bola u donjem dijelu leđa.

Rana detekcija i odgovarajući terapijski pristup u ambulanti porodične medicine, značajno bi smanjili funkcionalnu onesposobljenost, troškove zdravstvene zaštite i gubitak prihoda zbog izgubljene produktivnosti.

Intensive fear of physical activity and avoidance of physical activity increase functional disability.

The intensity of somatic symptoms doesn't influence the level of functional dysfunction.

The presence of myocardiodopathy, bronchial asthma and diabetes mellitus doesn't correlate with the level of functional disability.

Recommendations

There is a need for family doctors to reacquaint themselves with the important role of comorbidities in defining the level of functional disability in patients with low back pain, through continuous medical education.

Family physicians should familiarize themselves with standardized questionnaires for detection of anxiety depression and fear of physical activity and its avoidance. It is of great importance since these disorders prolong the chronic nature of low back pain.

Early detection and adequate medical treatment in the office of the family physician would significantly decrease functional disability, health care costs and income loss due to the loss of productivity.

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