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# Relationship Betwen the Quality of Life and the Lumbar Syndrome, in Middle-Aged Persons

# Povezanost kvaliteta života i lumbalnog sindroma osoba srednje životne dobi

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***Abstract:*** *Lumbar syndrome (LS) is very common in the population of middle-aged people, especially those who are physically insufficiently active. LS is characterized by lower back pain, and the frequency of pain is one of the risk factors for the quality of life. The aim of the study is to identify the quality of life in people with LS, in relation to the frequency of pain that occurs. The sample consisted of 202 respondents (93 male and 109 female, the average of 47.5 years of age) which was stratified in 3 subsamples, in relation to the frequency of the back pain. The data was collected by a questionnaire designed for the purposes of this research, PAL questionnaire (Perception of Active Lifestyle, Nešić, 2016), which is intended for self-assessment of the quality of life. Based on Spearman's Rho coefficient, it has been proven that with the more frequent back pain, the quality of life of the respondents' decreases (p=.000). Relatively high values of $\chi 2 = 23.09$ indicated a statistically significant difference in quality of life in people with different frequency of back pain (p=.000). Respondents who had occasional back pain had the highest quality of life, while the respondents with very frequent back pain, had the lowest. In people with a history of lumbar pain, physical activity occupies a very important place, it affects the reduction and the frequency of pain and thus directly on the quality of life of people in this population.*

***Keywords:*** *lumbar syndrome, quality of life, relations, pain, exercise.*

***Sažetak:*** *Lumbalni sindrom (LS) je veoma zastupljen u populaciji osoba srednje životne dobi, posebno onih koji su fizički nedovoljno aktivni. LS karakteriše bol u donjem delu leđa, a učestalost bola je jedan od riziko faktora za kvalitet života. Cilj istraživanja je identifikovanje kvaliteta života kod osoba sa LS, a u odnosu na učestalost bola koja se javlja. Uzorak je činilo 202 ispitanika (93 muškarca i 109 žena, prosečne starosti 47.5 godina) koji je stratifikovan u 3 subuzorka, a u odnosu na učestalost bola u leđima. Podaci su prikupljeni upitnikom koji je dizajniran za potrebe ovog istraživanja, PKŽS upitnik (Percepcija Aktivnog Životnog Stila, Nešić, 2016), a koji je namenjen samoproceni kvaliteta života. Na osnovu Spirmanovog Rho koeficijenta dokazano je da se sa učestalijim bolom u leđima smanjuje kvalitet života ispitanika (p=.000). Relativno visoke vrednosti $\chi^2=23.09$ ukazale su na statistički značajnu razliku u kvalitetu života kod osoba sa različitom učestalošću bolova u leđima (p=.000). Najviši kvalitet života su imali ispitanici koji su imali povremenu bol u leđima, a najniži osobe sa veoma čestim bolom u leđima. Kod osoba sa istorijom lumbalnog bola fizička aktivnost zauzima veoma važno mesto, utiče na smanjenje i učestalost bola, pa time direktno i na kvalitet života osoba ove populacije.*

***Ključne riječi:*** *lumbalni sindrom, kvalitet života, relacije, bol, vežbanje.*

## Introduction

Pain in the lumbar spine, lasting more than 12 weeks, is defined as Lumbar Syndrome (LS) (Patrick, Emanski & Knaub, 2014). Pain may be present intermittently or constantly (often recurrent), and the intensity of pain can range from mild to intense. At least one episode of lumbar pain is experienced by as many as 80% of peo-

## Uvod

Bol u lumbalnom delu kičme koji traje duže od 12 nedelja, definiše se kao Lumbalni sindrom (LS) (Patrick, Emanski & Knaub, 2014). Bol može biti prisutan povremeno ili konstantno (često se ponavlja), a intenzitet bola se može kretati od slabog do intenzivnog. Najmanje jednu epizodu lumbalnog bola, doživi čak 80% ljudi to-

ple during their lifetime (Nachemson & Jonsson, 2000). A distinction should be made between pain characteristic of LS and nonspecific back pain that may be caused by other pathologies (tumor, osteoporosis, rheumatoid arthritis, fracture...) (Hoy et al., 2010; Chou, 2011).

The cause of LS is usually unknown and is most likely multifactorial (Wallach et al., 2003). The causes of LS can be related to risk factors that include a sedentary behavior (Barone Gibbs et al, 2018), insufficient physical activity, but also more difficult physical work (frequent bending, lifting loads and prolonged static positions). In younger people, the cause of LS is most often related to muscle imbalance, poor flexibility of the muscles and tendons of the hind thigh, structural (degenerative) changes in the spine, as well as inadequate training procedure (dosage, intensity). During growth, muscles and ligaments often do not follow bone growth, which leads to muscle imbalance and lumbar pain. (Purcell, 2009). LS can also occur in people with reduced hip muscle strength (Alsufiany et al., 2020) and reduced physical activity and sitting time longer than 7 hours per day (Park et al, 2018). n middle-aged people, the most common cause is a sitting position at work, during which most time is spent (Senba & Kami, 2017; Citko at al., 2018; Bontrup et al., 2019).

A review study found that psychological factors, anxiety, and depression were associated with pain in LS (Chou, 2011, Bletzer et al, 2016). Also, it was found that in the later stage of diagnosed LS, psychological factors anxiety, depression and mental changes affect the reduction of the quality of social relations (Bair et al, 2008), and thus the quality of life. Factors related to professional activities are also linked to LS, i.e., the transition from acute to chronic condition (Chou, 2011; Dennerlein, 2018). It must be said that the impact of LS on socioeconomic conditions is very significant, because it is a common cause of disability of middle-aged people who should be in active labor. The specific pain reported by people with LS (self-assessment), which leads to limitations in physical functioning, increased from 20.7% to 24.7% since 1997 to 2005 (Alleva et al., 2016). Massive and more frequent LS related illness is a major medical, social and economic problem and leads to huge costs of treatment and rehabilitation. Therefore, the aim of this study is to determine the relationship between pain and quality of life (physiological and psychological health, social relations and environment) in middle-aged people with LS, who reported different frequency of pain.

kom života (Nachemson & Jonsson, 2000). Treba praviti razliku između bola koji karakteriše LS i nespecifičnog bola u leđima koji može biti izazvan drugom patologijim (tumor, osteoporoza, reumatoidni artritis, fraktura...) (Hoy et al., 2010; Chou, 2011).

Uzrok LS je najčešće nepoznat i najverovatnije je multifaktorijalan (Wallach et al., 2003). Uzročnici LS mogu se dovesti u vezu sa faktorima rizika koji uključuju sedentaran način ponašanja (Barone Gibbs et al, 2018), nedovoljnu fizičku aktivnost, ali i teže fizičke poslove (često savijanje, podizanje tereta i dugotrajne statičke pozicije). Kod mlađih osoba uzrok nastanka LS, najčešće je u vezi sa mišićnim disbalansom, slabom gipkošću mišića i tetiva zadnje lože natkolenice, strukturalnim (degenerativnim) promenama na kičmi, kao i neadekvatnim trenažnim postupkom (doziranje, intenzitet). Tokom rasta, mišići i ligamenti često ne prate rast kostiju, što dovodi do mišićnog disbalansa i pojave lumbalnog bola (Purcell, 2009). Lumbalni sindrom se može javiti i kod osoba s smanjenom snagom mišića zgloba kuka (Alsufiany et al., 2020) i smanjenom fizičkom aktivnošću i vremenom sedenja dužim od 7 h na dan (Park et al, 2018). Kod osoba srednje životne dobi najčešći uzročnik je sedeća pozicija na poslu, tokom koje se provodi najviše vremena (Senba & Kami, 2017; Citko at al., 2018; Bontrup et al., 2019).

Preglednom studijom utvrđeno je da su psihološki faktori, zabrinutost i depresija, povezani sa bolom kod LS (Chou, 2011, Bletzer et al, 2016). Takođe, utvrđeno je da u kasnijoj fazi dijagnostifikovanog LS, pshološki faktori: anksioznost, depresija i mentalne promene utiču na smanjenje kvaliteta socijalnih odnosa (Bair et al, 2008), a time i kvaliteta života. Faktori koji su u vezi sa profesionalnim aktivnostima, takođe se dovode u vezu sa LS, odnosno, prelazom iz akutnog u hronično stanje (Chou, 2011; Dennerlein, 2018). Mora se reći da je uticaj LS na društveno-ekonomske prilike veoma značajan, jer je on čest uzročnik invaliditeta osoba srednje starosne dobi koja bi trebala biti radno aktivna. Specifičan bol koji prijavljuju osobe sa LS (samoprocena) i koji dovodi do ograničenja u fizičkom funkcionisanju, povećao se sa 20,7% na 24,7% od 1997. do 2005. godine (Alleva et al., 2016). Masovnije i učestalije oboljevanje od LS predstavlja veliki medicinski, socijalni i ekonomski problem i dovodi do ogromnih troškova lečenja i rehabilitacije. Stoga, cilj ovog istraživanje je da kod osoba srednje životne dobi sa LS koji su prijavili različitu učestalost bola, upravo utvrdi relacije bola i kvaliteta života (telesno i psihološko zdravlje, socijalni odnosi i okruženje).

## Method

The study presents an empirical non-experimental research of a transversal character. The study sample consisted of a total of 202 respondents (M = 93; F = 109), the average of 47.5 years of age, who were undergoing physiatric treatment in four cities at the time of the study (Novi Sad, Subotica, Kanjiža and Bačka Palanka). The sample was stratified into 3 subsamples, in relation to the frequency of back pain: intermittent pain (113 respondents or 55.94%), frequent pain (48 respondents or 23.76%) and very frequent pain (41 respondents or 20.30%) and it was a categorical variable in the study. The research data was collected by a questionnaire designed for the purposes of this study. In designing the instrument, items whose construct was based on a modified version of the WHOQOL-BREF questionnaire were used (*World Health Organization Quality of Life Questionnaire – BREF*) (WHOQOL group, 1998) and PAL questionnaire (Perception of Active Lifestyle) (Nešić, 2016), for the self-assessment of the quality of life. The designed questionnaire included 29 items distributed in 5 variables: Physical Health (8 items), Mental Health (7 items), Social Relations (5 items) and Environment (9 items).

The results of the study are presented textually and tabularly. For all examined variables, the frequencies and the percentage value of the results at the level of the entire sample of respondents were calculated. A non-parametric statistical method, the chi-square test, was used to determine differences in life habits (the level of significance $p \leq 0,05$). The relationship between self-assessment of the quality of life and the frequency of the back pain was tested by *Spearman's Rho correlation coefficient*. The collected data was processed in a statistical package SPSS.20 (Statistical Package for the Social Sciences, V.20; SPSS Inc., Chicago, Illinois, USA).

## Results

Based on the results of *Spearman's Ro coefficient* and its statistical significance (Table 1), it can be concluded that all four variables for self-assessment of the quality of life satisfaction, Physical Health, Psychological Health, Social Relations and the Environment are in negative statistically significant correlations ($p = 0.00$) with the variable Back Pain. That is, the more frequent the back pain, the worse the satisfaction with the quality of life of the respondents. The greatest negative correlation can be observed in the variable Physical Health (r=-.415). Observing the relations between the variables for the self-assessment of the quality of life satisfaction in respondents with back pain, a positive statistically signif-

## Metod

Rad predstavlja empirijsko neeksperimentalno istraživanje, transverzalnog karaktera. Uzorak istraživanja činilo je ukupno 202 ispitanika (M=93; Ž=109), starosti 47.5 godina, koji su u vreme ispitivanja bili pod fizijatrijskim tretmanom u četiri grada (Novi Sad, Subotica, Kanjiža i Bačka Palanka). Uzorak je stratifikovan u 3 subuzorka, a u odnosu na učestalost bola u leđima: povremena bol (113 ispitanika ili 55.94%), česta bol (48 ispitanika ili 23.76%) i veoma česta bol (41 ispitanika ili 20.30%) i predstvaljala je kategorijalnu varijablu u istraživanju. Istraživački podaci su prikupljeni upitnikom koji je dizajniran za potrebe ovog istraživanja. Pri dizajniranju instrumenta korišćeni su ajtemi čiji se konstrukt zasnivao na modifikovanoj verziji, WHOQOL-BREF upitnika (*World Health Organization Quality of Life Questionnare – BREF*) (WHOQOL group, 1998) i PKŽS upitnika (*Percepcija Aktivnog Životnog Stila*) (Nešić, 2016), a za samoprocenu kvaliteta života. Dizajnirani upitnik obuhvatio je 29 ajtema raspoređenih u 5 varijabli: Telesno zdravlje (8 ajtema), Psihičko zdravlje (7 ajtema), Socijalni odnosi (5 ajtema) i Okruženje (9 ajtema).

Rezultati istraživanja su prikazani tekstualno i tabelarno. Za sve ispitane varijable su bile računate frekvencije i procentualna vrednost rezultata na nivou celokupnog uzorka ispitanika. Za utvrđivanje razlika u životnim navikama korišćena je neparametrijska statistička metoda *hi-kvadrat* test (nivoom značajnosti $p \leq 0,05$). Relacija samoprocene kvaliteta života i učestalosti bola u leđima testirana je *Spirmanovim Ro koeficijentom korelacije*. Prikupljeni podaci su obrađeni u statističkom paketu SPSS.20 (Statistical Package for the Social Sciences, V.20; SPSS Inc, Chicago, Illinois, USA).

## Rezultati

Na osnovu rezultata *Spirmanovog Ro koeficijenta* i njegove statističke značajnosti (Tabela 1) može se konstatovati da su sve četiri varijable za samoprocenu zadovoljstva kvalitetom života, Telesno zdravlje, Psihološko zdravlje, Socijalni odnosi i Okruženje u negativnim statistički značajnim korelacijama ($p=0.00$) sa varijablom Bol u leđima. Odnosno, da što je bol u leđima bila učestalija to je zadovoljstvo kvalitetetom života ispitanika bilo lošije. Najveću negativnu povezanost možemo uočiti u varijabli Telesno zdravlje (r=-.415). Posmatrajući odnose između varijabli za samoprocenu zadovoljstva kvalitetom života kod ispitanika sa bolom u leđima, može se konstatovati pozitivna statistički značajna korelacija ($p=.000$), što upućuje na činjenicu da

icant correlation can be stated (p = .000), which indicates the fact that the respondents with better physical health had better psychological health and social relations as well as a better environment (Table 1).

***Table 1.*** *Correlation of back pain and quality of life self-assessment variables*

su ispitanici sa boljim telesnim zdravljem imali i bolje psihološko zdravlje i socijalne odnose kao i bolje okruženje (Tabela 1).

***Tabela 1.*** *Korelacija bola u leđima i varijabli samoprocene kvaliteta života*

| ***Variables Statistics /*** **Varijable Statistici** | | ***Physical health /*** **Telesno zdravlje** | ***Psychological health /*** **Psihološko zdravlje** | ***Social relations /*** **Socijalni odnosi** | ***Environment /*** **Okruženje** |
|---|---|---|---|---|---|
| *Back pain /* Bolovi u leđima | *Correlation Coefficient /* Correlation Coefficient | -.415 | -.299 | -.345 | -.298 |
| | *Sig. (2-tailed)* | .000 | .000 | .000 | .000 |
| | *N* | 202 | 202 | 202 | 202 |
| *Physical health /* Telesno Zdravlje | *Correlation Coefficient /* Correlation Coefficient | | .674 | .615 | .542 |
| | *Sig. (2-tailed)* | | .000 | .000 | .000 |
| | *N* | | 202 | 202 | 202 |
| *Psychological health /* Psihološko zdravlje | *Correlation Coefficient /* Correlation Coefficient | | | .732 | .682 |
| | *Sig. (2-tailed)* | | | .000 | .000 |
| | *N* | | | 202 | 202 |
| *Social relations /* Socijalni odnosi | *Correlation Coefficient /* Correlation Coefficient | | | | .711 |
| | *Sig. (2-tailed)* | | | | .000 |
| | *N* | | | | 202 |

The results of the chi-square test shown in Table 2 show that there are statistically significant differences in the variable for assessing quality of life satisfaction, the Satisfaction with quality of life (p=.000) value $\chi^2$=23.09. The highest percentage of respondents who had occasional back pain and a good quality of life was noticeable (42.48%). 20.84% of respondents had frequent back pain and good quality of life, while 17.07% of respondents had very frequent pain and good quality of life. To make the results even more justified, the data indicate that the average quality of life again had the highest percentage of respondents who had occasional back pain (42.48%).

Rezultati testiranja *hi-kvadrat* testom prikazani u Tabeli 2 pokazuju da postoje statistički značajne razlike u varijabli za procenu zadovoljstva kvaliteta života, Zadovoljstvo kvalitetom života (p=.000) pri vrednosti $\chi^2$=23.09. Primetan je najveći procenat ispitanika koji su imali povremenu bol u leđima i dobar kvalitet života (42.48%). Čestu bol u leđima i dobar kvalitet života imalo je 20.84% ispitanika, dok je veoma čestu bol i dobar kvalitet života imalo 17.07% ispitanika. Da bi rezultati bili još opravdaniji ukazuju i podaci da je prosečan kvalitet života opet imao najveći procenat ispitanika koji su imali povremenu bol u leđima (42.48%).

***Table 2.*** *Contingency table Satisfaction with quality of life and Back pain*

***Tabela 2.*** *Kontigencijska tabela Zadovoljstvo kvalitetom života i Bolovi u leđima*

| ***Variable /*** **Varijable** | ***Satisfactory /*** **Zadovoljavajući** | ***Average /*** **Prosečan** | ***Good /*** **Dobar** | ***Total /*** **Ukupno** |
|---|---|---|---|---|
| *Occasionally /* Povremeno | 21 (18.58%) | 44 (38.94%) | 48 (42.48%) | 113 (100.0%) |
| *Frequently /* Često | 19 (39.58%) | 19 (39.58%) | 10 (20.84%) | 48 (100.0%) |
| *Very frequently /* Veoma često | 22 (53.66%) | 12 (29.27%) | 7 (17.07%) | 41 (100%) |
| *Total /* Ukupno | 62 (30.7%) | 75 (37.1%) | 65 (32.2%) | 202 (100.0%) |
| *χ2(4, 202)=23.09, p=.000* | | | | |

***Legend:*** *χ2 - chi-square test value; p - level of statistical significance of the chi-square test*

***Legenda:*** *$\chi^2$ – vrednost hi-kvadrat testa; p – nivo statističke značajnosti hi kvadrat testa*

## Discussion

In this study, all respondents had a history of LS, which means that they fully felt the consequences, first of all pain, and then other accompanying changes (limited range of motion, anxiety...). Based on the results and application of *Spearman's Ro correlation coefficient*, it was determined that the frequency of pain is in a negative, statistically significant correlation (p=.000) with variables for self-assessment of quality of life, namely Physical Health, Psychological Health, Social Relations and the Environment. It is to be expected that the more frequent the back pain, the worse the quality of life. More frequent back pain is related to poorer physical health, because pain is a limiting factor for many conditions and activities (Hoy et al, 2010), also reduces participation in daily physical activity (DFA) (Marshall, Schabrun & Knox, 2017), sports and recreational activities, etc. Based on the above, a reduced level of fitness impairs the overall health (National Institutes of Neurological Disorders and Stroke, 2020). On the other hand, pain and discomfort in the body negatively affect the quality of sleep (Marin, Cyhan & Miklos, 2016) and rest, and sometimes on the quality and regularity of daily meals.

The application of kinesitherapy treatment, that is, exercise, is one of the most effective in the treatment of LS. Based on the results of this study, it is identified that the respondents with a reduced frequency of pain were more physically active, which implied a higher level of quality of life, taking into account the factors of psychosocial health. Studies that have treated the problem of pain in LS have confirmed the connection between pain and psychosocial health factors (Vlaeyen & Linton, 2000; Bair et al, 2008; Bletzer et al, 2016).

## Diskusija

U ovoj studiji, svi ispitanici imali su istoriju lumbalnog sindroma, što znači da su u potpunosti osetili posledice, u prvom redu bol, a zatim i druge propratne promene (ograničen obim pokreta, anksioznost...). Na osnovu rezultata i primene *Spirmanovog Ro koeficijenta korelacije* utvrđeno je da je učestalost bola u negativnoj, statistički značajnoj korelaciji (p=.000) sa varijablama za samoprocenu kvaliteta života, i to za Telesno zdravlje, Psihološko zdravlje, Socijalne odnose i Okruženje. Za očekivati je da, što je bol u leđima učestalija, kvalitet života je lošiji. Učestaliji bol u leđima je u vezi sa lošijim telesnim zdravljem, jer je bol limitirajući faktor za mnoga stanja i aktivnosti (Hoy et al, 2010), takođe umanjuje i učešće u dnevnoj fizičkoj aktivnosti (DFA) (Marshall, Schabrun & Knox, 2017), sportsko-rekreaktivnim aktivnostima i sl. Na osnovu gore navedenog, smanjeni nivo kondicije narušava zdravlje u celini (National Institutes of Neurological Disorders and Stroke, 2020). Sa druge strane, bol i nelagodnost u telu negativno utiče i na kvalitet sna (Marin, Cyhan & Miklos, 2016) i odmora, a ponekad i na kvalitet i redovnosti dnevnih obroka.

Primena kineziterapijskog tretmana, odnosno vežbe, jedan je od najefikasnijih u terapiji LS. Na osnovu rezultata ove studije, identifikuje se da su ispitanici sa smanjenom učestalošću bola bili fizički aktivniji što je impliciralo i na njihov viši nivo kvaliteta života, uzimajući u obzir i faktore psiho-socijalnog zdravlja. Studije koje su tretirale problem bola kod LS, potvrdile su povezanost bola i faktora psiho-socijalnog zdravlja (Vlaeyen & Linton, 2000; Bair et al, 2008; Bletzer et al, 2016).

U drugom delu istraživanja, potvrđen je dobar kvalitet života kod ispitanika kod kojih se bol javljao samo

In the second part of the study, a good quality of life was confirmed in respondents in whom pain occurred only occasionally (42.48%), while in 53.66% of respondents in whom pain occurred very often the quality of life was satisfactory. This result is in line with review studies that investigated the relation between pain and quality of life (Van Middelkoop et al., (2010); Lee et al (2015) Marshall, Schabrun & Knox (2017).

## Conclusion

Based on this research, it can be concluded that people with LS who report more frequent lower back pain, have a poorer perception of their own quality of life. Poor quality of life was most often associated with physical health and restriction to participate in daily physical activities (movement), but also sports and recreational activities. They also significantly report the connection between pain and poorer quality of life in the psycho-social sense. Therefore, it can be concluded that quality of life can and must be related to the current state and frequency of pain in the population with LS.

povremeno (42,48%), dok je kod 53,66% ispitanika kod kojih se bol javljala veoma često, kvalitet života bio zadovoljavajući. Ovaj rezultat je u skladu sa preglednim studijama u kojima je istraživana relacija bola i kvaliteta života (Van Middelkoop et al., (2010); Lee et al (2015) Marshall, Schabrun & Knox (2017).

## Zaključak

Na osnovu ovog istraživanja može se zaključiti do osobe sa LS koje prijavljuju učestaliji bol u donjem delu leđa, imaju i lošiju percepciju sopstvenog kvaliteta života. Loš kvalitet života najčešće su dovodili u vezu sa telesnim zdravljem i ograničenjem da učestvuju u svakodnevnim fizičkim aktivnostima (kretanje), ali i sportsko rekreativnim aktivnostima. Takođe, značajno prijavljuju i povezanost bola sa lošijim kvalitetom života u psiho-socijalnom smislu. Stoga, može se zaključiti da se kvalitet života može i mora dovesti u vezu sa trenutnim stanjem i učestalošću bola kod populacije sa lumbalnim sindromom.

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