



Quality of life and health behaviours of patients with low back pain

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Abstract

The aim of this study was to assess the quality of life and health behaviours and to analyse the relationship between the quality of life and health behaviours in the group of patients with low back pain (LBP). *Material and methods:* The research was conducted on a sample of 52 patients with LBP (29 female and 23 male, $M(\text{age}) = 48.96 \pm 15.86$). The tool used for assessing the quality of life was the Quality of Life Questionnaire (WHOQoL-BREF, Polish version), whereas the methodological basis for investigating health behaviours was the Health Behaviour Inventory (HBI). *Results:* The analysis revealed that the General Index of Intensity of Health Behaviours (GIIHB) was high in 30.8%, average in 40.4% and low in 28.8% of the respondents. Statistically significant positive relationships were observed between: (1) Positive Thinking (HBI) and: Overall Quality of Life ($R=0.42$), General Health ($R=0.29$), Psychological domain ($R=0.46$) and Environmental domain ($R=0.44$); (2) between Proper Nutritional Habits (HBI) and Overall Quality of Life ($R=0.38$), Psychological domain ($R=0.28$), Environmental domain ($R=0.30$); (3) between Health Practices (HBI) and: Overall Quality of Life ($R=0.31$) and Psychological domain ($R=0.28$); (4) between Preventive Behaviours (HBI) and two domains: Psychological domain ($R=0.34$) and Environmental domain ($R=0.34$). GIIHB for the respondents in general was a factor that significantly differentiated quality of life in Psychological domain ($p=0.031$) and Environmental domain ($p=0.026$). *Conclusion:* In general, positive correlations concerning quality of life and health behaviours of the respondents were observed between the Psychological domain and all categories of health behaviours (HBI). Furthermore, positive correlations were found for Overall Quality of Life and Environmental domain with most of HBI categories. In light of these findings, it should be indicated that the focus during therapies for patients with LBP aimed to improve their quality of life should be on education in the field of health behaviours.

Keywords: quality of life, health behaviours, low back pain

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INTRODUCTION

Pain in the lumbar spine, termed low back pain (LBP), is one of the most common health problems in the world [1-7], being the most prevalent cause of incapacity to work [6] and one of the main causes of physical disability of people under 45 years of age [8,9]. The prevalence of this health problem [10] represents a significant burden on the state budget [11,12] and demonstrates the gravity of the problem from the socioeconomic standpoint, whereas substantial dispersion of the disease is an interdisciplinary problem. It is worrying that recent years have seen an increase in the prevalence of LBP [1,3,13].

It is estimated that 85% of all low back pain cases are described as non-specific pain, without radicular symptoms and changes in reflexes or sensory disturbances [14,15]. The most common diagnosis found among patients in the United States treated for spinal pain (N=17,774) was *herniated disc* (19.2%), *spinal stenosis* (13.1%) and *degenerative spondylosis* (12.9%) [16]. The analysis (N=12,500) of the medical case records of Polish patients aged up to 60 years who came to see a doctor at family medicine centres revealed that the most common spinal pain problem was caused by degenerative disease [17]. However, the presence of degenerative changes in the spine does not fully explain the pain pathogenesis. Additional components of the pathomechanisms that occur in any case should be taken into account, including muscles, nerves, and psyche. Back pain may be the first symptom of cryptic depression [18]. Pinherio et al. [19], based on a meta-analysis, demonstrated that people with depressive symptoms and anxiety disorders are exposed to a higher risk of back pain in the lumbosacral region of the spine in the future, and the risk is positively correlated with the severity of depressive symptoms in a patient. The importance of psychological risk factors is emphasized, including depression, psychological stress and being convinced of the inevitable development of persistent back pain [20]. Patients with chronic back pain have been shown to be exposed at higher risk of mental disorders compared to other members of society, whereas negative beliefs concerning back pain are associated with high levels of low back pain [21]. In addition to psychological factors conducive to back pain such as stress, anxiety, depression, dissatisfaction with work, low level of social support in the workplace, and poor psychosocial conditions, the importance of other risk factors has been also emphasized, including older age, sex (female), ethnic factors, congenital factors, genetic determinants, overweight, obesity, smoking, occupation, physical activity, high bone mass, hormone levels, psychosocial determinants, low level of education, socio-economic status, and general health status [5,6,22,23].

Taking into account the effect of health status on the satisfaction from functioning in everyday life led to the introduction of the concept of health-related quality of life (HRQoL) into the literature. This concept is multidimensional and includes the subjective assessment of the areas of life related to physical, mental, social and environmental functioning in the context of an illness or disability and their treatment [24]. The studies that have examined quality of life have demonstrated a multifaceted nature of the problem and referred to several factors that are likely to affect the quality of life [25]. Although health behaviours may be determinants of quality of life, the previous studies that have examined the relationships and correlations between these variables [26-28] have not focused on the problem of back pain. The relationship between the quality of life of people with low back pain and their health behaviour remains a multidimensional health problem and many factors may be related with it [29-31]. Therefore, the focus of our study was on identification of health behaviours which affect the overall quality of life and its main domains.

The aim of this study was (a) to analyse health behaviours in terms of self-rated positive thinking, proper nutritional habits, health practices and preventive behaviours (b) to assess overall quality of life (OQoL), general health (GH) and quality of life in the physical, mental, social and environmental domains, and (c) to establish relationships between quality of life compared to the level of health behaviours in the LBP group.

MATERIAL AND METHODS

The study group consisted of patients of the Spondylus Non-Public Health Care Centre located in Szczecin, Poland. The experiment was approved by the Bioethics Committee at the Regional Medical Chamber (Resolution No. Nr 06/KB/VI/2017 as of 30 March 2017). The criterion for the inclusion in the study was low back pain, informed consent of the patient in the presence of the researcher and the ability to fill in the study questionnaire by the patient. The exclusion criteria were health status which did not allow patient to complete the tests (unbearable pain) and no coexisting diseases such as advanced osteoporosis - spontaneous bone fractures, pain related to cancers; anomalies and pathological vascular changes leading to symptoms of vertebrobasilar insufficiency (carotid artery occlusion or dissection, vertebral artery insufficiency, embolism); ligamentous laxity in the upper cervical spine in the case of rheumatic diseases; serious internal disorders; spinal cord compression symptoms and ponytail syndrome; rapidly progressing muscle paralysis (e.g. foot drop), and pregnancy.

The examinations were conducted from April 2017 to March 2018. A total of 96 people with lumbar and sacral spine problems were examined. The final analysis included only those patients (N=52) who were clinically diagnosed with LBP. The group of 52 participants was comprised of 29 women (55.77%) and 23 men (44.23%). The mean age was 48.96 ± 15.86 years, with 52.17 ± 15.31 years in women and 44.91 ± 15.95 years in men. Among all the patients, 70.7% experienced joint pain and almost 15% suffered from it during activities of daily living.

The research tool used to assess the quality of life was the WHOQoL-BREF questionnaire (Polish version) [32]. Health Behaviour Inventory (HBI) according to Juczyński [33] was used to assess health behaviours. Statistical analysis of the results was performed by means of Statistica 13.1 PL software. Differences in quality of life depending on the level of health behaviours were evaluated by means of the Kruskal-Wallis ANOVA. Relationships between the variables were analysed using the Spearman's rank correlation test. The level of statistical significance was set at $p \leq 0.05$.

Measurement of the quality of life: the Polish version of the WHOQoL-BREF questionnaire

The WHOQoL-BREF questionnaire consists of 26 questions. The first two questions were analysed separately. They concerned self-assessed overall quality of life and general health of the respondents. The remaining 24 questions assessed four domains of the quality of life (Physical Health - 7 questions, Psychological - 6 questions, Social Relationships - 3 questions, and Environmental - 8 questions). The respondents were asked to mark their answers using a five-level rating scale (from 1 to 5 points). The score is positive: the higher the mean in a given domain, the better the quality of life. The quality of life in respective domains was expressed as the mean value, calculated according to the key and guidelines provided by the authors.

Measurement of health behaviour: Health Behaviour Inventory

The General Index of Intensity of Health Behaviours (GIIHB) was calculated by adding the results for all the 24 statements included in the Health Behaviour Inventory. The obtained GIIHB ranged from 24 to 120 points. The results were then converted to standard units and interpreted in terms of the sten score system. According to the guidelines presented by the author of the questionnaire, the respondents were divided into three groups: with a high GIIHB (7-10 stens), an average GIIHB (5-6 stens), and a low GIIHB (1-4 stens). Four categories of health behaviours were analysed separately: Positive Thinking, Proper Nutritional Habits, Health Practices and Preventive Behaviours.

The present study examined four categories: Proper Nutritional Habits, which, according to authors takes into consideration mainly the type of foods consumed (e.g. wholegrain bread, vegetables or fruit); Preventive Behaviours, which include adhering to medical recommendations and obtaining information concerning health and sickness; Health Practices, which concern sleeping habits, recreation and physical activity; Positive Thinking, which means avoiding strong emotions, stress, tension and depressing situations. They were calculated as mean values of the results in the analysed category (ranking from 1.0-5.0), following the adopted diagnostic key. The higher the result, the healthier the habits.

RESULTS

According to the criteria of the *International Statistical Classification of Diseases and Related Health Problems* (WHO ICD-10) [34], the most common diagnoses in patients treated for pain problems in the lumbosacral region of the spine included disc herniation (M_{51.2}) (55.77%), degenerative disease (M₄₇) (50.00%), spinal canal stenosis (M_{99.5}) (34.62%), and psychogenic pain (F_{45.4}) (3.84%).

The majority of respondents (61.54%) lived in the cities of over 100.000 inhabitants, 19.23% lived in the cities from 10.000 to 100.000 inhabitants, and 13.46% were residents of small towns or rural areas (5.77%). Among the respondents, 43.14% had higher education, 29.42% had secondary education, 11.76% - basic education, and the fewest people had primary education (3.92%). Over two thirds of the respondents worked professionally (83.33%), whereas other respondents were retired (12.51%), on a disability pension (2.08%) or did not work (2.08%).

Perception of the quality of life and health in patients with low back pain

When asked about the individual Overall Quality of Life (OQoL) measured with the WHOQoL-BREF scale, 53.84% of the respondents assessed their quality of life as good and very good (9.61% and 7.70% respectively), while 7.70% reported their quality of life as bad or very bad (3.85% and 3.85% respectively). The mean value of the OQoL among the respondents was 3.62 assessed on a scale of 1 to 5 points, with standard deviation of 0.87 (Fig. 1). In women, the mean value was 3.69±0.93, whereas in men, this was 3.52±0.79. Furthermore, the results of the analysis of self-rated General Health (GH) (Fig. 1) revealed that 30.77% respondents were dissatisfied or very dissatisfied (11.54%) from their health status, whereas the percentage of those satisfied was 40.39% and very satisfied (7.69%). The mean result of GH assessed by the respondents on a scale of 1 to 5 points was 3.02 (Fig. 1), with standard deviation of 1.23 (respectively 2.86±1.33 in women and 3.22±1.09 in men). However, statistical analysis did not show statistically significant differences in the assessments of both Overall Quality of Life (p=0.587) and General Health (p=0.343) between women and men.

Quality of life of patients with low back pain in the Physical Health, Psychological, Social Relationships and Environmental domains

The assessment of the quality of life of the respondents was made in four major domains: Physical, Psychological, Social and Environmental. Detailed data are presented in Fig. 2. The analysis of the data showed that the respondents rated their quality of life as the lowest in the Physical Health domain at M=13.88±2.77 (M=13.30±2.99 in women and M=14.61±2.32 in men), whereas the highest assessments of the quality of life were found for the Environmental domain at M=15.34±2.95, with these results being very similar in women and men (15.29±2.91 and 15.39±3.05, respectively). Regarding the Psychological domain and Social Relationships domain, the results were M=15.01±3.23 and M=15.17±3.57, respectively, for all the respondents. However, the statistical analysis did not reveal statistically significant differences in the assessment of any of the domains: Physical Health domain (p=0.087), Psychological domain (p=0.412), Social Relationships domain (p=0.352), and Environmental domain (p=0.868) between women and men.

Health behaviours among patients with low back pain

The analysis revealed that the General Index of Intensity of Health Behaviours (GIIHB) was high in 30.8%, average in 40.4% and low in 28.8% of the respondents. The results of individual categories of health behaviours were (Fig. 3) for the Positive Thinking: M=3.54±0.62 (M=3.57±0.66 in women and M=3.49±0.59 in men), Proper Nutritional Habits: M=3.38±0.70 (M=3.63±0.65 in women and M=3.05±0.65 in men), Health Practices: M=3.34±0.72 (M=3.50±0.74 in women and M=3.15±0.64 in men), and Preventive Behaviours: M=3.59±0.74 (M=3.72±0.65 in women and M=3.4±0.81 in men). In the case of the analysis of the results of the categories of Proper Nutritional Habits (p=0.006) and Health Practices (p=0.032), statistical analysis showed statistically significant differences in the assessment between women and men.

Health behaviours and the quality of life of patients with low back pain

The analysis (Kruskal-Wallis ANOVA) of the results between groups with high, average and low General Index of Intensity of Health Behaviours (GIIHB) for all respondents showed statistically relevant difference in some of WHOQoL-BREF domains: Psychological domain ($p=0.031$) and Environmental domain ($p=0.026$).

Significant correlations were found between individual categories of health behaviours and quality of life (Tab.1). Statistically significant positive relationships were observed between: (1) Positive Thinking (HBI) and: Overall Quality of Life ($R=0.42$), General Health ($R=0.29$), Psychological domain ($R=0.46$) and Environmental domain ($R=0.44$); (2) between Proper Nutritional Habits (HBI) and Overall Quality of Life ($R=0.38$), Psychological domain ($R=0.28$), Environmental domain ($R=0.30$); (3) between Health Practices (HBI) and: Overall Quality of Life ($R=0.31$) and Psychological domain ($R=0.28$); (4) between Preventive Behaviours (HBI) and two domains: Psychological domain ($R=0.34$) and Environmental domain ($R=0.34$). GIIHB for the respondents in general was a factor that significantly differentiated quality of life in Psychological domain ($p=0.031$) and Environmental domain ($p=0.026$).

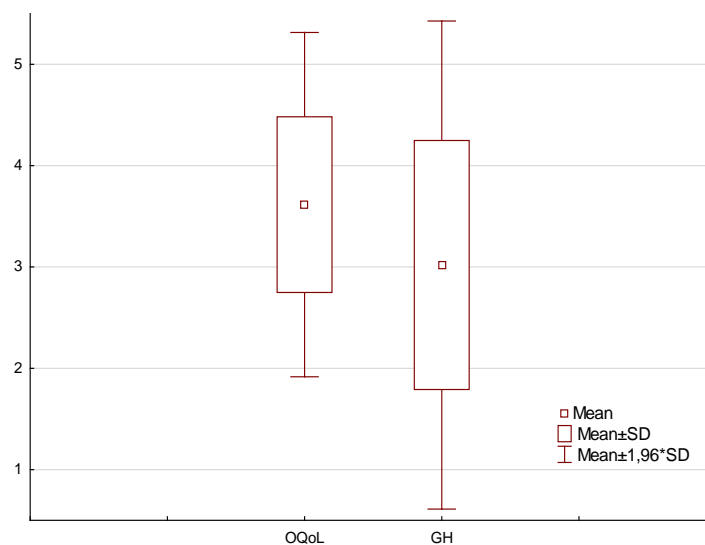


Figure 1. Means and standard deviations for the assessments of the Overall Quality of Life (OQoL) and the General Health (GH) among all respondents with LBP.

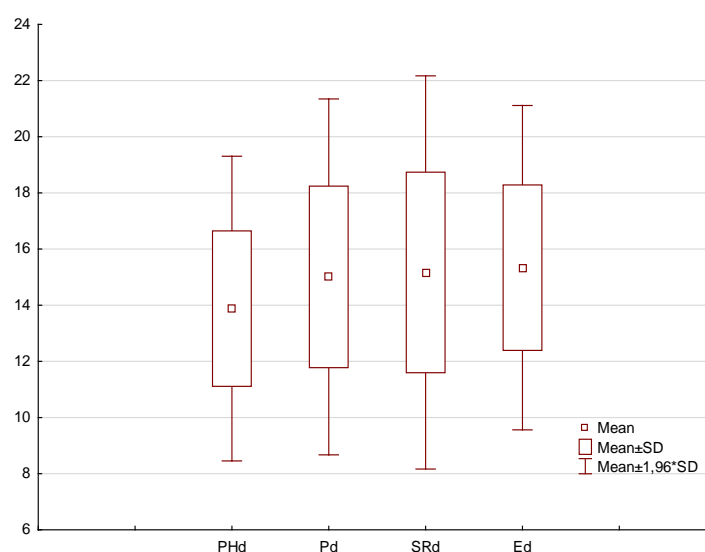


Figure 2. Means and standard deviations of the results obtained for WHOQoL-BREF domains: Physical Health domain (PHd), Psychological domain (Pd), Social Relationships domain (SRd), Environmental domain (Ed) among all respondents with LBP.

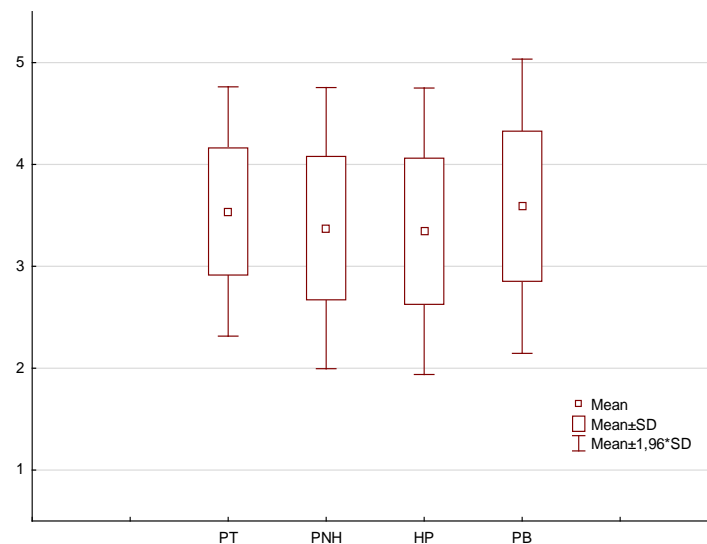


Figure 3. Means and standard deviations of the results obtained for individual categories of health behaviours: Positive Thinking (PT), Proper Nutritional Habits (PNH), Health Practices (HP), Preventive Behaviours (PB) among all patients with LBP.

Table 1. Correlations between Health Behaviour Inventory and WHOQoL-BREF of patients with LBP

WHOQoL-BREF \ Health Behaviour Inventory	Overall Quality of Life	General Health	WHOQoL-BREF domain			
			Physical Health	Psychological	Social Relationships	Environment
Positive Thinking	0.42*	0.29*	0.26	0.46*	0.45*	0.44*
Proper Nutritional Habits	0.38*	0.17	0.07	0.28*	0.33*	0.30*
Health Practices	0.31*	0.09	0.15	0.28*	0.17	0.26
Preventive Behaviours	0.27	0.10	0.11	0.34*	0.33*	0.34*

DISCUSSION

Spinal pain is one of the most frequently diagnosed diseases of the osteoarticular system [10], the most frequently reported problem in population-based studies [7] and the second main cause of sickness absence [35]. Furthermore, they are the most common cause of inability to work [6]. Low back pain is a recurrent disorder with alternating episodes of exacerbation and remission, with each relapse of low back pain increasing the risk of the next episode. Estimates of recurrent ailments within the first year range between 24% and 80% [5]. In some patients, the pain develops into chronic pain, affecting the quality of life and representing a serious socio-economic problem. In the course of the disease, the biological functions of human body are gradually impaired, people suffer from physical disabilities, whereas mental and social functioning of the patient is heavily modified, leading to low quality of life [36-39]. Many patients with spinal disorders stress that quality of life is more important to them than life expectancy [40]. The research on the quality of life in people with LBP is inspired by the care for patient's well-being and aimed to assess the patient's health status holistically while providing a comprehensive insight into complex medical problems concerning physical and mental health of patients and the environment in which they function.

Analysis of the results of our own research on the quality of life of patients with LBP based on the WHOQoL-BREF questionnaire revealed the lowest values among women for two main domains: Physical Health domain (M=13.30) and Psychological domain (M=14.68), whereas in men, for Physical Health domain (M=14.61) and Environmental domain (M=15.39). This confirms the thesis that the discomfort resulting from the specificity of the disease causes a serious limitation to the physical area. The Physical Health domain consists of energy for everyday activities, physical independence, pain, and ability to work. Similar results were documented in a study conducted by Zaniewska et al. [41], where the lowest score (M=13.49) was also recorded in the Physical Health domain of the WHOQoL-BREF scale, followed by the Environmental domain (M=14.27) and Psychological domain (M=14.32). Similar research results were also observed by Sierakowska et al. [42], who found the lowest scores in the Psychological domain (M=11.0) and Physical Health domain (M=11.2) in the HRQoL assessment of patients with osteoarthritis. Researchers underline that psychosocial factors play an important role in the development of low back pain [31]. Recently published research also indicates that for patients with low back pain, their health-related quality of life depended on their functional status and psychological factors even more than on simple physical impairment [29]. In our research we noticed correlations between the Overall Quality of Life and three categories of health behaviors (Preventive Behaviors being an exception), while General Health was related only to Positive Thinking. As for specific WHOQoL-BREF domains, we observed correlations for all the health behavior categories in the Psychological Domain, and for three health behavior categories in the Social Relationships and Environmental Domains. In the Physical Health Domain we did not notice any correlations with health behaviors.

Pain in patients with LBP has a significant impact on their quality of life. Studies have demonstrated that pain is the dominant symptom in LBP, and it can radiate to the buttocks or the left or right lower limb [15,18]. The division of pain into acute and chronic is conventional. It is assumed that acute pain lasts up to a month, and chronic pain takes more than 3 months. If the same pain lasts less than 3 months but is recurring, it is also termed a chronic recurring pain [18]. It should be emphasized that chronic pain leads to gradual deterioration in patient's mood and depression, which intensifies perception of pain. Furthermore, presence of common neurobiological mechanisms causes depression and pain to intensify each other [43].

In this study, 70.7% of patients experienced joint pain and almost 15% suffered from it during activities of daily living. Furthermore, Klimaszewska et al. [44] analysed quality of life in patients with lumbar spine pain and found that 33.9% of patients experienced everyday pain. Sierakowska et al. [42] found that of numerous health problems reported by patients, pain was the most frequent, with 82% of respondents feeling pain very often and the pain being the most frequent problem of people with osteoarthritis. A study published by Czaja et al. [36] demonstrated that pain and, to a lesser extent, disability, had the greatest impact on quality of life.

Back pain forces people to modify their lifestyles. With progressing degenerative changes, physical fitness is reduced, leading to the occurrence of specific problems in the activities of daily living, including the limitation of the ability to perform the roles of active members of society. Decreased physical fitness leads to limitation in social roles, which undoubtedly impacts on mood disorders, low self-esteem and depression [19-21]. Acceptance of the disease, combined with professional care, education and physical therapy exercises, has a positive effect on the quality of life of people with low back pain [45], reduces negative emotions resulting from the disorder, thus relieving stress, and increasing self-esteem of the patient regardless of the disease.

Scientific studies have demonstrated that negative beliefs concerning back pain are associated with persistently high levels of low back pain [21]. Patients often avoid performing activities of daily living, professional duties or physical activity, which gives them a sense of protection against the exacerbation of pain [46]. This phenomenon causes a significant deterioration in the quality of life, increases disability and extends the period of absence from work [47]. In our own study, we found that GIHB was for the respondents a factor which differentiated the quality of life in the Psychological (p=0.031) and Environmental (p=0.026) domains. In terms of the level of healthy behaviours in the analysed group of patients, our study showed that more than half of the respondents (53.84%) assessed their quality of life as good and very good (9.61%). However, a slightly lower percentage of

respondents (40.39% and 7.69%, respectively) declared that their health status was good and very good.

According to modern guidelines [45] on effective treatment of patients with LBP, the main focus should be on the improvement in the quality of life and preventing pain. Physical exercises, manual therapy, psychological therapy, multidisciplinary rehabilitation, spinal manipulation, massage and mindfulness-based stress reduction are highly effective in the treatment of low back pain [45,48]. Population-based studies have shown, however, that this is the most frequently overlooked element of lifestyles of modern societies [47,49,50]. In order for these concerns to be addressed, the patients need to acquire the knowledge and skills of self-care [42]. The prerequisite for this is to implement effective health education programs to instil healthy attitudes, promote healthy lifestyles and healthy diets, encourage regular physical activity, and maintain peace, mental relaxation and positive thinking [51,52]. Consideration should be given to the development of education and training programs aimed to raise awareness among patients with LBP and ultimately to improve their quality of life. Following an educational interventions as part of public health campaigns in Australia [53], Scotland [54] and Norway [55], positive modifications of individual beliefs concerning low back pain were documented. Furthermore, clinical studies [56] have shown that distribution of information brochures containing detailed information on back pain has been effective in reduction of persistent back pain. Depending on the needs, it is advisable to consider counselling on adaptation of workplaces, using basic principles of ergonomics for the purpose [57].

CONCLUSION

In general, positive correlations concerning quality of life and health behaviours of the respondents were observed between the Psychological domain and all categories of health behaviours (HBI). Furthermore, positive correlations were found for Overall Quality of Life and Environmental domain with most of HBI categories. In light of these findings, it should be indicated that the focus during therapies for patients with LBP aimed to improve their quality of life should be on education in the field of health behaviours.

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