SOCIETY. INTEGRATION. EDUCATION
Proceedings of the International Scientific Conference. Volume IV, May 25th -26th, 2018. 144-153

STRESS COPING AS A PSYCHOLOGICAL FACTOR FOR CHRONIFICATION OF LOW BACK PAIN

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Abstract. *Stress is a part of our everyday life and it plays an important role in causing various diseases including low back pain and vice versa chronic pain is a stressor that is challenging stress system of the human body. Purpose of the study is to examine stress coping among patients with low back pain in rehabilitation practice in Latvia. Demographic questionnaire, Visual analogue scale and "The Ways of Coping scale" were used. Results. Almost all stress coping strategies scores for patients with low back pain in their first visit are higher than in patients with revisit to Physical Medicine and Rehabilitation doctor and there is statistically significant difference in the use of problem oriented stress coping. Conclusion. This research is meaningful due to the fact it allows to acknowledge and evaluate the spectrum of stress coping ways for patients with low back pain.*
Keywords: *Stress coping, Low back pain, Rehabilitation.*

Introduction

Low back pain (LBP) is a major public health problem worldwide. Most people experience LBP at some point in their lifetime, with two-thirds having a recurrence and one third having periods of disability. LBP is among the leading causes of activity limitation and absence from work (Rozenberg, 2012) and it causes an enormous economic burden on individuals, families, communities, industry and governments (Steenstra et al., 2005; Kent & Keating, 2005; Thelin, Holmberg, & Thelin, 2008).

http://dx.doi.org/10.17770/sie2018vol1.3227

Based on a 2012 systematic review data prevalence of LBP was higher in women (35.3 % versus 29.4 % in men) and was highest in the groups aged 40 to 49 and 60 to 69 years (Rozenberg, 2012).

Recommendations of LBP management includes an evaluation of flags - risk factors for chronicity. Red flags are signs and symptoms that suggest a specific underlying disease for example tumour, infection, or inflammatory disease. Orange flags identify psychopathological issues that require specific treatment, such as posttraumatic stress disorder, personality disorders, and depression. Patients with orange flags should be referred to specialists and evaluated routinely, particularly in patients on sick leave for longer than 4 weeks (Rozenberg, 2012). There are three categories of psychosocial flags: person's beliefs, feelings and behaviour, associated with workplace and contextual factors. Most of these flags detect risk factors that are potentially amenable to modification: yellow flags identify psychological risk factors such as inappropriate fears or beliefs. Yellow flags have been proven to correlate with both the development of LBP and progression to chronicity (Nicholas, 2011). Researchers suggest that psychological events could be considered as risk factors for the development of chronic pain (Flor & Turk, 2013).

Among studies evaluating the effects of interventions targeting yellow flags, six showed improved outcomes in terms of function and return to work, whereas six others obtained no evidence of efficacy (Nicholas, 2011).

Blue flags assess perceived features of the work environments such as stress, lack of support, and excessive demand (Shaw, 2011) whereas black flags assess objective factors associated with the workplace and other components of the environment (e.g., insurance, family).

Stress is a part of our everyday life and it plays an important role in causing various diseases, including low back pain and vice versa chronic pain is a stressor that is challenging the stress system of the human body. Prolonged activation of the stress regulation system generates breakdowns of muscle, bone, and neural tissue that in turn cause major pain and produce a vicious circle of pain-stress-reactivity (Gatchel, 2004).

According to the theory of Lazarus and Folkman stress coping is constantly changing cognitive and behavioural effort to manage specific external and/or internal demands (Folkman & Lazarus, 1985).

The problems that are related with pain such as depression, anxiety, fear, disability, low self-esteem etc. may be appraised as exceeding person's resources and coping for patients with pain, means coping additionally with previously mentioned multiple stressors (Lazarus & Folkman, 1984; Boothby et al., 1999; Dysvik et al., 2005).

People differ depending on their capacity to cope with stress so it is crucial to investigate the role of the stress and stress coping in connection with low back pain.

Passive coping is a strong and independent predictor of disabling neck and/or back pain. This strong relationship identifies passive coping as a risk marker for disability and can permit the identification of individuals at risk and in need of intervention to aid in improving their overall adjustment (Mercado et al., 2005). Cognitions, such as beliefs, attitudes to work, coping mechanisms, and psychological distress are associated with LBP disability and treatment outcome.

Purpose of study: To examine stress coping among patients with low back pain in rehabilitation practice in Latvia.

Methods

Three research tools were used: a demographic questionnaire developed by the study authors, Visual analogue scale and "The Ways of Coping scale" (Folkman & Lazarus, 1985). Demographic questionnaire consisted of nine questions about patients' age, gender, education, family status, occupation, smoking, localization of back pain and pain duration.

The score of visual analogue scale was determined by measuring the distance (mm) on the 10-cm line between "no pain" and "severe pain", providing a range of scores from 0–100 mm (Jensen Karoly & Braver, 1986) Interpretation of the pain scores was made by the recommendation to follow the cut points on the VAS: no pain (0–4 mm), mild pain (5–44 mm), moderate pain (45–74 mm), and severe pain (75– 100 mm) (Jensen, Chen &, Brugger, 2003).

"The Ways of Coping scale" consisted of 66 items which were divided into 8 subscales. Confrontive Coping, Seeking Social Support and Planful Problem Solving corresponded to Problem-oriented stress coping, whereas Distancing, Self-Controlling, Accepting Responsibility, Escapes-Avoidance and Positive Reappraisal refers to Emotional-oriented stress coping. Cronbach's alfa for The Ways of Coping Questionnaire was 0.93 which means that the survey is consistent.

IBM SPSS version 20 was used for statistical analysis. Normality distribution was determined with *Kolmogorov–Smirnov* and *Shapiro–Wilk* tests. Homogeneity between groups were determined with *Leven's test. Independent sample T test* and *one-way ANOVA* was used to measure mean differences between groups. For analysing correlations *Pearson, Spearman and Kendell correlations* were used.

Results

Participants (n=74) were aged from 25 to 67; M=48.44±13.6 SD; males – 29 (39.2 %), females – 45 (60.8 %). Sociodemographic and medical data of patients with low back pain are described in the Table 1.

Table 1 **Sociodemographic and medical data of patients with low back pain**

	Scale	**N (%)**
	Widow/single	17 (22.9%)
	Married/ Cohabitant	57 (77.0%)
Education	Primary education	4 (5.4%)
	Secondary education	16 (21.6%)
	Professional secondary education	22 (30%)
	Highest education	32 (43%)
Pain duration	3 month	4 (5.4%)
	6 month	6 (8.1%)
	1-2 years	20 (27.1%)
	3-5 years	10 (13.5%)
	6-10 years	13 (17.5%)
	>10 years 21	27 (28.4%)
Visual analogue scale	No pain	8 (10.6%)
	Mild pain	48 (65.4%)
	Moderate pain	15 (20.2%)
	Severe pain	3 (4.1%)

Assessment of the data of mean values of the Ways of Coping Questionnaire (Table 2.) and comparing the data of patients with the data of the control group the following results were obtained - patients with back pain had significantly lower rates in almost all parameters. Besides results show that there was statistically significant difference in stress coping strategies between study participants and control group in few of the strategies.

Leading stress coping strategies of patients with low back pain were Planful Problem Solving (M=1.84±0.56), Self-Controlling (M=1.56±0.49) and Accepting Responsibility (M=1.55±0.53). Data shows that patients with low back pain in rehabilitation practice use more Problem-oriented stress coping (M=1.49±0.44).

There were found statistically significant differences in stress coping strategies between participants and control group. Control group used more such stress coping strategies as Confrontive coping, Accepting Responsibility, Escape-Avoidance, Positive Reappraisal and used more on Emotion-oriented stress coping strategies than patients with low back pain. (Table 2.)

Table 2 **Mean values of the Ways of Coping Questionnaire of patients with low back pain comparing to control group**

Scale	**Patients (n=71)**		**Control group (n=71)**		
	M	**SD**	**M**	**SD**	**P-value***
Confrontive Coping	1.22	0.45	1.52	0.50	<0.001
Seeking Social Support	1.49	0.54	1.60	0.62	0.250
Planful Problem Solving	1.84	0.56	1.76	0.59	0.427
Distancing	1.35	0.49	1.44	0.56	0.334
Self-Controlling	1.56	0.49	1.70	0.47	0.068
Accepting Responsibility	1.55	0.53	2.02	0.60	<0.001
Escape-Avoidance	1.26	0.47	1.62	0.53	<0.001
Positive Reappraisal	1.44	0.50	1.62	0.57	0.046
Problem-oriented Stress Coping	1.49	0.44	1.63	0.44	0.073
Emotion-oriented Stress Coping	1.43	0.39	1.68	0.42	<0.001

Statistically significant (<0.05)
**P-value was acquired using independent sampling T-test*

In the analysis of the Ways of coping data of patient with low back pain, depending on count of visits to Physical Medicine and Rehabilitation doctor (Table 3.) – there were higher scores in problem-oriented stress coping of patients in a first visit than patients with revisits, moreover these differences are statistically significant. The same scores were found for emotion-oriented stress coping for both groups. It was possible to see that some stress coping strategies of patients in a first visit to Physical Medicine and Rehabilitation doctor such as Confrontive Coping, Planful Problem Solving, Self-Controlling, Escape-Avoidance, Accepting Responsibility were higher than for patients in revisits.

Patients with low back pain in their first visit used more on problem-oriented stress coping strategies than patients in revisits (p=0.043)

Comparing the stress coping data of patients with low back pain with different pain severity (Table 4.) we can see that increasing intensity of pain increases also Emotion-oriented stress coping, Problem-oriented stress coping, Self-Controlling, Distancing as well as Confrontive Coping.

Analysis of Visual analogue scale results showed statistically significant correlation with Confrontive coping (r=0.355, p=0.003), Self-Controlling (r=0.294, p=0.053), Accepting Responsibility (r=0.431, p<0.001), Escape-Avoidance (r=0.353, p=0.001), Planful Problem Solving (r=0.259, p=0.052), Emotion-oriented problem coping (r=0.298, p=0.010).

Table 3 **Mean values of the Ways of Coping Questionnaire comparing the visit number**

Scale	**patients first visit (n=35)**		**revisits (n=35)**		
	M	***SD***	***M***	***SD***	***P-value****
Confrontive Coping	1.28	0.45	1.15	0.45	0.220
Seeking Social Support	1.60	0.50	1.37	0.56	0.078
Planful Problem Solving	1.90	0.61	1.74	0.49	0.227
Distancing	1.33	0.47	1.34	0.50	0.967
Self-Controlling	1.59	0.40	1.53	0.56	0.629
Accepting Responsibility	1.61	0.53	1.48	0.52	0.313
Escape-Avoidance	1.28	0.47	1.22	0.47	0.615
Positive Reappraisal	1.44	0.50	1.37	0.55	0.629
Problem-oriented Stress Coping	1.60	0.38	1.38	0.48	0.043
Emotion-oriented Stress Coping	1.46	0.31	1.39	0.45	0.466

Statistically significant (<0.05)
**P-value was acquired using independent sampling T-test*

Table 4 **Mean values of the Ways of Coping Questionnaire compering the pain severity by Visual Analogue scale**

Scale	**No pain (n=8) M±SD**	**Mild pain (n=48) M±SD**	**Moderate and severe pain (n=18) M±SD**	**P-value***
Confrontive Coping	1.04 ± 0.57	1.12 ± 0.40	1.56 ± 0.35	<0.001
Seeking Social Support	1.55 ± 0.47	1.46 ± 0.55	1.73 ± 0.36	0.356
Planful Problem Solving	1.95 ± 0.71	1.74 ± 0.47	2.18 ± 0.42	0.052
Distancing	1.20 ± 0.77	1.34 ± 0.45	1.46 ± 0.45	0.474
Self-Controlling	1.23 ± 0.58	1.54 ± 0.48	1.79 ± 0.37	0.021
Accepting Responsibility	1.12 ± 0.58	1.49 ± 0.46	1.93 ± 0.46	<0.001
Escape-Avoidance	0.98 ± 0.49	1.17 ± 0.46	1.62 ± 0.25	<0.001
Positive Reappraisal	1.42 ± 0.75	1.35 ± 0.51	1.61 ± 0.43	0.244
Problem-oriented stress coping	1.37 ± 0.65	1.44 ± 0.35	1.68 ± 0.51	0.092
Emotion-oriented stress coping	1.19 ± 0.59	1.38 ± 0.34	1.68 ± 0.27	0.004
**P-values were acquired using one-way ANOVA LSD test differences between groups*				

Visual analogue scale results showed statistically significant correlation (Table 5.) with Confrontive coping (r=0.355, p=0.003), Self-Controlling (r=0.294, p=0.053), Accepting Responsibility (r=0.431, p<0.001), Escape-Avoidance (r=0.353, p=0.001), Planful Problem Solving (r=0.259, p=0.052), emotion oriented problem coping (r=0.298, p=0.010).

Table 5 **Spearman correlation coefficients between Visual Analogue Scale and Way of Coping scale in study participants**

Ways of coping scale	Confrontive coping	Distancing	Self-Controlling	Seeking Social Support	Accepting Responsibility	Escape-Avoidance	Planful Problem Solving	Positive Reappraisal
VAS	**0.355****	0.117	**0.294***	0.048	**0.431****	**0.353****	**0.259***	-0.055
*P-value *<0.05 and **<0.01*								

Discussion

This study applied Lazarus and Folkman stress coping model (Lazarus & Folkman, 1984) to the spectrum of patients with low back pain in rehabilitation practice.

Our study patients with chronic low back pain had lower emotional state and in comparison with control group lower stress coping rates in almost all coping strategies, therefore it is difficult to achieve therapeutic progress and this could be due to the long duration of pain, especially for severe pain, probably causing hopelessness and helplessness.

It should be noted that almost all stress coping strategies scores for patients with low back pain in their first visit are higher than in patients with revisit to Physical and Rehabilitation Medicine doctor and there is statistically significant difference in the use of problem-oriented stress coping. Furthermore, the problem oriented coping score of first visit low back pain patients is almost equivalent to the control group.

Reviews concerning chronic pain have shown that active coping (problem-focused coping) tended to be associated with better physical and psychological functioning so it is possible that patients with low back pain who have appropriate level of problem oriented coping do not need as much revisits but patients who require more revisits tend to be in a state of passive resignation and seek further professional help (Persson & Lilja, 2001).

Problem–focused coping style contributed significantly to higher acceptance of living with low back pain. Using this coping style can be therefore regarded as a marker of good adjustment to low back pain, especially in terms of a balanced attitude toward the disease (acceptance but not giving-up). It is worth noting that

acceptance of life with low back pain was significantly predicted also by a cognitive appraisal of challenge (Janowski, Steuden, & Kuryłowicz, 2010).

In the same way illness perceptions for low back pain patients, especially the consequences of the illness, and coping have a relevant part in the explanation of distress. However, more researches are necessary about the role of coping in relation to long term illness perceptions (Dempster, Howell, & McCorry, 2015).

There are some relevant aspects of psychosocial functioning in patients with back pain. One of them is conscientiousness, which has also been implicated as a personality resource which may prove positive when coping with stress, including disease-related stress. People with higher levels of conscientiousness were shown to prefer thoughtful, task-oriented strategies of coping with stress, showed more endurance when coping with stress and reported greater personal growth following resolution of stressful situations. They also coped with stress usually more effectively than those low in conscientiousness (Costa, Somerfield, & McCrae, 1996; Hewitt & Flett, 1996)

Results of studies about chronic illness patients with higher conscientiousness showed better adaptation to the disease through higher compliance with medical recommendations and through practicing pro-health behaviours (Wiebe & Christensen, 1996).

The main goal of rehabilitation should be to change patient assessment of threat realistically, evaluation of challenge for active participation and problem solving. There is a need of such assessment training with focus of differentiation between specific stressful and changeable situations and global and unchangeable aspects (Folkman et al., 1991). Several authors propose that the treatment for patients with low back pain should be included in a multidisciplinary rehabilitation programme with cognitive behavioural therapy group, working with advance of coping with residual pain and limitations and to change negative attitudes towards work, social situations and disability.

The present study has some limitations. One of the limitation is relatively small sample, second the analysis relied on self-report measures, but our findings are helpful in drawing attention of medical field to the need of assessing psychological factors in patients with low back pain.

Conclusion

This research is meaningful due to the fact it allows to acknowledge and evaluate the spectrum of stress coping ways for patients with low back pain. As chronic pain is described as multidimensional, there is a necessity to pay attention not only to medical treatment of low back pain but also to psychological factors influencing low back pain disorder as well as coping.

It is significant to continue the work with this survey and evaluate the therapeutic results in long-term.

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