

Part III. Other
Dział III. Różne

SELECTED ELEMENTS OF LIFESTYLE IN RELATION TO THE LEVEL OF A NON-SPECIFIC PAIN OF THE CERVICAL SPINE IN PERSONS AGED 20-35 YEARS

WYBRANE ELEMENTY STYLU ŻYCIA A POZIOM NIESWOISTYCH BÓLÓW KRĘGOSŁUPA SZYJNEGO OSÓB W WIEKU 20-35 LAT

Elżbieta Rutkowska^{1(A,B,C,D,E,F)}, Ireneusz Hałas^{2(A,B,C,F)}

¹Pope John Paul II State School of Higher Education in Biała Podlaska, Poland

²Regional Centre of Occupational Medicine in Lublin, Poland

Authors' contribution

Wkład autorów:

- A. Study design/planning
zaplanowanie badań
- B. Data collection/entry
zebranie danych
- C. Data analysis/statistics
dane – analiza i statystyki
- D. Data interpretation
interpretacja danych
- E. Preparation of manuscript
przygotowanie artykułu
- F. Literature analysis/search
wyszukiwanie i analiza literatury
- G. Funds collection
zebranie funduszy

Summary

Background. Non-specific back pain indicating serious distant health and social consequences is an important challenge for both health promotion and prevention programs.

Material and methods. The study was conducted 150 patients (20-35 years) of the Rehabilitation Centre of the Regional Occupational Medicine Centre, Therapeutic and Preventive Centre in Lublin diagnosed with non-specific neck pain. The study also used VAS (Visual Analogue Scale) for self-assessment of the severity of pain - using proprietary questionnaire.

Results. The study also revealed unhealthy behaviour of respondents: lack of regular physical activity, regular – almost daily – consumption of alcohol and fatigue. In 36% of study participants, abnormal body mass index (BMI) was found. There was a significant relationship between the irregularity of this index and the level of severity of pain according to VAS (visual analogue scale). Reported pain was the greater – the more the respondents crossed a normal working time. No significant relationship between the level of pain and the quality of physical recreation, economic status and the level of life satisfaction was shown.

Conclusions. Prevention programs should be addressed especially to women with abnormal BMI value who perform long hours' office work. Health education in the field of work ergonomics, compensatory exercises and rational nutrition is necessary.

Keywords: pain, young, neck, people, non-specific

Streszczenie

Wprowadzenie. Niespecyficzne bóle kręgosłupa skutkujące w okresie odległym poważnymi konsekwencjami zdrowotnymi i społecznymi są ważnym wyzwaniem dla programów promocji zdrowia i profilaktyki.

Materiał i metody. Badanie przeprowadzono w grupie 150 chorych (20-35 lat), pacjentów Ośrodka Rehabilitacji Leczniczej Wojewódzkiego Ośrodka Medycyny Pracy Centrum Profilaktyczno-Leczniczego w Lublinie z rozpoznaniem nieswoistych bólów kręgosłupa szyjnego. W badaniach zastosowano skalę VAS (Visual Analogue Scale) do samooceny nasilenia bólu - oraz autorski kwestionariusz ankiety.

Wyniki. Badanie wykazało istotne anty-zdrowotne zachowania respondentów: brak systematycznej aktywności fizycznej, regularne – prawie codziennie – spożycie alkoholu i pracę w wymiarze ponadwymiarowym, powodującą zmęczenie. W grupie 36% uczestników badania, wskaźnik masy ciała (BMI) miał wartości nieprawidłowe. Stwierdzono istotną zależność pomiędzy nieprawidłowością tego wskaźnika i poziomem nasilenia bólu według VAS (wizualnej skali analogowej). Zgłaszany ból był tym większy – im częściej respondenci przekroczyli także normalny czas pracy. Nie stwierdzono istotnego związku między poziomem bólu i jakością rekreacji fizycznej, statusem ekonomicznym i poziomem jakości życia.

Wnioski. Programy profilaktyczne bólów kręgosłupa szyjnego powinny być kierowane przede wszystkim do kobiet z nieprawidłową wartością BMI, osób które wykonują pracę biurową w wymiarze ponadnormatywnym. Konieczna jest edukacja zdrowotna w zakresie ergonomii pracy, ćwiczeń kompensacyjno-wyrównawczych i racjonalnego odżywiania.

Słowa kluczowe: niespecyficzne bóle, kręgosłup szyjny, młodzi ludzie

Tables: 2

Figures: 0

References: 28

Submitted: 24.04.2016

Accepted: 02.05.2016

Rutkowska E, Halas I. Selected elements of lifestyle in relation to the level of a non-specific pain of the cervical spine in persons aged 20-35 years. Health Problems of Civilization. 2016; 10(4): 42-46. doi: 10.5114/hpc.2016.63570.

Address for correspondence / Adres korespondencyjny: Elżbieta Rutkowska, Pope John Paul II State School of Higher Education in Biała Podlaska, Siderska 95/97, 21-500 Biała Podlaska, Poland, e-mail: elzbieta.rutkowska1@wp.pl, phone +48 83 344 99 00

Copyright: © 2016 Pope John Paul II State School of Higher Education in Biała Podlaska, Elżbieta Rutkowska, Ireneusz Hałas. This is an Open Access journal, all articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License (<http://creativecommons.org/licenses/by-nc-sa/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material, provided the original work is properly cited and states its license.

Introduction

Low back and cervical pain is the most frequently reported musculoskeletal ailment in modern societies. Medical statistics show that every sixth patient is referred to diagnostic tests due to the persistence of such pain [1,2]. Spine dysfunctions and the limitations in activities of daily living, learning, work and leisure activities resulting therefrom are a major health problem of modern populations [3,4,5,6]. It is also a serious social problem, because the cost of treatments and – additionally – much higher costs of being unfit for work and costs of other disabilities due to back pain are high and keep rising [7,8]. Development of effective strategies for the prevention and treatment of back pain is therefore an urgent task for the preventive and corrective medicine.

Determination of the causes of neck and back pain is the basis for the development of an appropriate treatment strategy. In the vast majority of people reporting back pain there are no significant defects, diseases and structural changes in both physical and imaging tests [9]. In such cases the sources of non-specific back pain include muscle, fascia and ligament apparatus disorders [10]. They usually result from the low overall exercise capacity, abnormal motor habits and unilateral motor organ loads both at work and in everyday life as well as the negligence of pro-health lifestyle [11]. Long-term muscle disorders lead over time to major structural changes in the joint of the spine. They also result in the impairment of the functions of both nervous and circulatory system. Psychoreactive disorders may occur as well [12,13], which significantly reduces the quality-of-life indicators [14,15].

The aim of the studies conducted by us in the years 2012-2014 was *inter alia* to identify modifiable risk factors for non-specific back pain in young patients. Recognition of these factors can be used to program health education in primary and secondary prevention of disability resulting from dysfunctions and certain diseases of the spine.

Material and methods

The study was conducted in a group of patients of the Rehabilitation Department of the Regional Occupational Health Centre in Lublin diagnosed according to International Statistical Classification of Diseases and Related Health Problems ICD-10 [16]. Our study enrolled patients aged 20-35 years (average age: 27±4.54) diagnosed with non-specific neck pain marked with the codes according to ICD-10: M-54.2, M-70.8 and M-70.9. Patients were referred to physiotherapy due to these ailments. Patients with congenital malformations diagnosed with discopathy after mechanical injuries were excluded from the study. In total, the study involved 194 patients, but physically hard working people and those playing competitive sports were excluded from the analysis of the collected material. Finally, the material collected from 150 people was analysed.

The study was carried out based on a diagnostic survey, using a surveying technique – on the basis of a proprietary questionnaire. The study also used VAS (Visual Analogue Scale) for self-assessment of the severity of pain. Collected material was analysed both qualitatively and quantitatively using the following tests: the Pearson's Chi-squared test and the Fisher's Exact Test for Count Data, using Statistica 10PL programme.

Results

The study involved 114 (76%) women and 36 (24%) men. Due to such gender distribution, a detailed statistical analyses of this factor in further studies were abandoned. Most of the examined people - 95 (63.33%) – were persons with a stable employment situation. They performed physical and mental work (officials, entrepreneurs, sales representatives). There were 55 students in the study group (36.67%). Every second student – 28 persons – combined work and education. Nine persons were treated for cardiovascular disease, 8 – due to nervous system diseases (including depression) and 11 for other diseases of the musculoskeletal system, not related to the spine. The rest reported no significant health problems.

All study participants were referred to physiotherapy because of non-specific pain of the cervical spine that lasts longer than three months. Patients joining the rehabilitation assessed the severity of pain according to VAS as 5.4 (the lowest value: 3 points, the highest one: 8 points).

Then, the following lifestyle factors: working time, physical activity, smoking, alcohol consumption, energy expenditures – measured indirectly on the basis of BMI (Body Mass Index) – were evaluated. They were also asked to identify such psychosocial indicators as the level of life satisfaction and material status.

The analysis of the diagnostic survey results regarding drugs found that 139 people (92.67%) in the group of patients analyzed do not smoke (80%) or smoke 1-5 cigarettes a day, but only occasionally (12.67%). Alcohol consumption was equally uniform, although far from abstinence: 135 (90%) respondents consumed alcohol “a few times a month” and “almost every day”. The remaining persons declared a total abstinence – 5 persons (3.33%) or consume alcohol “a few times a year” – 10 persons (6.67%). Due to such distribution of variables they were not used in further analyses.

Table 1 presents the distribution of the prevalence of certain characteristics regarded as risk factors for non-specific back pain in the available literature.

Table 1. Selected characteristics of studied patients and their relationship with the severity of neck pain

Analysed variables	categories	severity of pain according to VAS		Pearson's Chi-squared test	value
		to 5 n (%)	from 6 n (%)	Value of test statistics	p-value
BMI	Abnormal n=54 (36%)	41 (27%)	13 (9%)	3.0456	0.08096*
	Normal n=96 (64%)	58 (39%) (45%)	38 (25%) (20%)		
PHYSICAL ACTIVITY	lack/occasional n=109 (72%)	74 (49%)	35 (23%)	0.364	0.5463
	Systematic n=41(28%)	25 (17%)	16 (11%)		
LIFE SATISFACTION scale 0-10 (0=dissatisfaction 10=maximum value)	0-5 n=16 (10%)	11 (7%)	5 (3%)	1.6039E-30	1
	6-10 n=134 (90%)	88 (59%)	46 (31%)		
ECONOMIC VALUE	Very good and good n=31 (21%)	22 (15%)	9 (6%)	0.19599	0.658
	Unsatisfactory and bad n=119 (79%)	77 (51%)	42 (28%)		
WORKING TIME	less than 8 hours a day n=71 (47%)	48	23	0.048814	0.8251

Information presented above indicate that these are persons with high self-assessment of the quality of life (90% of responses), despite the unsatisfactory financial situation (79%). Most of them (72%) do not take regular physical recreation and more than a third of them (36%) has an abnormal BMI. Nearly half (47%) of the study group was had to deal with both occupational and educational duties for less than 8 hours a day, while the remaining persons worked more than 8 hours a day. The adopted working time categories – up to 8 hours and over 8 hours – also showed no differences in the intensity of pain. A relationship between the severity of pain and the intensity of physical activity, material status, family status and the level of life satisfaction had not been established. It was found, however, that persons with an abnormal BMI significantly more often experience ($p=0.08096$) greater pain in the spine (Tab.1).

A more detailed analysis of the relationship between working time and the severity of non-specific neck pain showed that the pain reported increases significantly ($p=0.0698$) with extending working time (Tab. 2).

Table 2. Average working time a day in relation to the scale of pain of the cervical spine

factor	working time	Severity of pain according to VAS		Fisher's Exact Test for Count Data
		3-5 points n (%)	6-8 points N (%)	p-value
WORKING TIME	0-4 hours	6 (4%)	5 (3%)	0.0698
	4-8 hours	42 (28%)	18 (12%)	
	8-10 hours	47 (31%)	20 (13%)	
	< 10 hours	5 (3%)	8 (5%)	

Those who worked more than 10 hours a day reported the greatest neck pain (7-8 points in VAS).

Discussion

The presence of low back pain and the development of massive degenerative changes in the second half of the 20th century was mainly associated with the exercise of excessively heavy physical labour or many hours' sitting in a single position [17,18]. The effects of such a lifestyle accumulated over many years and eventually led to a serious disability.

In recent years, the problem of persistent back pain affects a growing number of young people who do not work physically. The problem becomes pain in the neck and shoulders reported by getting younger people [19]. Risk factors do not include mechanical overload, but rather low physical fitness. Only 28% of respondents regularly participate in physical recreation which may have compensational effects, if it is properly selected. Other factors are: many hours' forced body position, miniaturization of movements characteristic of the operation of electronic devices which are used not only for educational and occupational purposes, but also to fill the free time. This results in disorders of muscles responsible for posture and head position control. In connection with such a lifestyle, primary aches are more and more often located in the neck and shoulder area [20].

Another cause of non-specific back pain may be psychosocial factors [21,22,23]. In the study group this factor has not occurred: respondents highly appreciated the level of their life satisfaction. They were not addicted to tobacco, which is one of risk factors of myofascial pain of the spine [24,25].

The study conducted in the group of 150 young patients of the Department of Physiotherapy confirmed the presence of such risk factors as: female sex (19,22,23), scarcity of physical recreation, abnormal BMI value (which may be an indirect measure of the energy balance) and excessive working time [26]. The study group was dominated by women who performed mostly office work [19,27]. Declaration of the unsatisfactory economic status made by the majority of respondents (79%) also predicts excessive working time.

In the light of the results obtained – there is a statistically significant relationship between extending working time, mostly conceptual work, computer work, excess body weight and increasing severity of pain according to VAS. These risk factors should be eliminated as first priority in the existing programs of primary prevention of non-specific back pain and those being created [28].

Conclusions

Non-specific back pain, due to the prevailing lifestyle of 150 respondents, indicated their serious health problems related to inevitable degeneration of the joints, permanent dysfunction of muscles and fascia which may occur in the future. Methods of physical pain treatments result only in immediate help.

Prevention programs should be addressed especially to women with abnormal BMI value who perform long hours' office work. Health education in the field of work ergonomics, compensatory exercises and rational nutrition is necessary. Such activities should be pursued within the framework of the general physical education as well as individualized and intensified during the first physiotherapy sessions.

References:

1. Jøud A, Petersson IF, Englund M. Low back pain: Epidemiology of consultations *Arth Care Res.* 2012; 64(7): 1084-1088.
2. Andersson GBJ. Epidemiological features of chronic low-back pain. *Lancet.* 1999; 354(9178): 581-585.
3. van Tulder M, Becker A, Bekkering T, Breen A, del Real MT, Hutchinson A, et al. European guidelines for the management of acute nonspecific low back pain in primary care. *Eur Spine J.* 2006; 15(Suppl 2): S169-191.
4. Leboeuf-Yde C, Nielsen J, Kyvik KO, Fejer R, Hartvigsen J. Pain in the lumbar, thoracic or cervical regions: Do age and gender matter? A population-based study of 34,902 Danish twins 20–71 years of age. *BMC Musculoskelet Disord.* 2009; 10: 39-42.
5. Costa Gomez B, Izzo R, Zeccolini F, Muto M. Epidemiology, Economics and Psycho-social of Low Back Pain. *Int J Ozone Therapy.* 2013; 12: 86-89.
6. Makris UE, Fraenkel L, Han L, Leo-Summers L, Gill TM. Epidemiology of Restricting Back Pain in Community-Living Older Persons. *J Am Geriatr Soc.* 2011; 59: 610–614.
7. Smolińska B, Smoliński A, Pięta W, Stankiewicz-Choroszuca B. Nowoczesna rehabilitacja w schorzeniach kręgosłupa odcinka krzyżowo-lędźwiowego ludzi czynnych zawodowo – wybrane metody, jako odpowiedź na wzrastającą absencję w pracy spowodowaną bólami krzyża. *Med Pr.* 2004; 55(5): 439-443.
8. Dagenais S, Caro J, Haldeman S. A systematic review of low back pain cost of illness studies in the United States and internationally. *Spine J.* 2008; 8(1): 8–20.

9. Balagué F, Mannion AF, Pellisé F, Cedraschi C. Non-specific low back pain. *Lancet*. 2012; 379: 482–91.
10. Gerwin RD, Myofascial Pain Syndrom: Unresolved Issue and Future Directions. In: Dommerholt J., Huijbregts P., eds. *Myofascial Trigger points. Pathophysiology and Evidence-Informed Diagnosis and Management*. Massachusetts: Jones and Barlett Publishers Sudbury; 2011. p. 17-50.
11. Mattioli S, Brillante R, Zanardi F, Bonfiglioli R. Occupational (and non-occupational) risk factors for musculoskeletal disorders. *Med Lav*. 2006; 97(3): 529-34.
12. Pietrobon R, Coeytaux RR, Carey TS, Richardson WJ, De Vellis RF. Standard scales for measurement of functional outcome for cervical pain or dysfunction: a systematic review. *Spine*. 2002; 27(5): 515–522.
13. Markis UE, Malhado TV, Lee SC, Hamann HA, Walke LM, Fraenkel L. Illness Representations of Restricting Back Pain: The Older Person's Perspective. *Pain Med*. 2014; 15(6): 948-946.
14. Hansson E, Hansson T, Jososson R. Predictors for work ability and disability in men and women with low-back or neck problems. *Eur Spine*. 2006; 15(6): 780-793.
15. Gajewski T, Woźnica I, Młynarska M, Ćwikła S, Strzemecka J, Bojar I. Wybrane aspekty jakości życia osób ze zmianami zwyrodnieniowymi kręgosłupa i stawów. *Med. Og Nauki o Zdr*, 2013; 19(3): 362-369.
16. International Statistical Classification of Diseases and Related Health Problems, ICD-10, Volume I. World Health Organization, 2009.
17. Zhang Jian-pi. Epidemiological investigation and analysis of risk factors for back pain in coal miners. *The Journal of Practical Medicine*. 2010; 26: 487–490.
18. Limburska I. Back pain in coal miners of anthracite coal-pilot study results. *Med Pr*. 1996; 47(4): 339–346.
19. Kanchanomai S, Janwomtanakul P, Pesri P, Jimjarasrangsi W. Risk factors for the onset and persistence of neck pain in undergraduate students: 1-year prospective cohort study. *BMC Public Health*, 2011; 11: 566-570.
20. Hoving JL, de Vet HCW, Twisk JWR, Deville W, van der Windt D, Koes BW, et al. Prognostic factors for neck pain in general practice. *Pain*, 2004; 110(3): 639-645.
21. Duncan R, Campbell-Hewson G. Back pain in children: dig a bit deeper. *Eur J Emerg Med*. 2005; 12: 317–319.
22. Jones GT, Macfarlane GJ. Epidemiology of low back pain in children and adolescents. *Arch Dis Child*. 2005; 90: 312–316.
23. Da Costa BR, Vieira ER. Risk factors for work-related musculoskeletal disorders: A systematic review of recent longitudinal studies. *Am J Ind Med*. 2010; 53(3): 285-323.
24. Fejer R, Kyvik KO, Hartvigsen J. The prevalence of neck pain in the world population: a systematic critical review of the literature. *Eur Spine J*. 2006; 15(6): 834-848.
25. Côté P, van der Velde G, Cassidy JD, Carroll LJ, Hogg-Johnson S, Holm LW, et al. The burden and determinants of neck pain in workers. Results of the bone and joint decade 2000–2010 task force on neck pain and its associated disorders. *Spine*. 2008; 33(4): S60–74.
26. Mattioli S, Brillante R, Zanardi F, Bonfiglioli R. Occupational (and non-occupational) risk factors for musculoskeletal disorders. *Med Lav*. 2006; 97(3): 529-34.
27. Drozdowski Z. Refleksje antropologa nad aktywnością ruchową nadchodzących pokoleń. *Człowiek i Ruch. Human Movement*. 2000; 1(1): 16-19.
28. Gros AR, Kaplan F, Huang S, Khan M, Santaguida PL, Carlesso LC, et al. Psychological Care, Patient Education, Orthotics, Ergonomics and Prevention Strategies for Neck Pain: An Systematic Overview Update as Part of the ICON Project. *Open Orthop*. 2013; 20(7): 530-561.