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Quality of Life in Patients with Chronic Back Pain

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ABSTRACT

Background: Back pain recurs in many patients, becomes chronic, causes long-term sickness, and complicates return to work. Pain is a comprehensive experience projecting into the biopsychosocial and economic area. It affects movement and quality of life.

Objective: The paper aimed to map quality of life in patients with chronic back pain. Another goal was to find whether pharmacotherapy reduced pain and how pain intensity affects quality of life.

Methods: The SF-36 questionnaire was used to assess quality of life and the VAS (Visual Analogue Scale) to assess pain.

Results: The survey shows that patients with chronic back pain score the lowest in physical role, namely that their physical health limits them at work or everyday activities. The second lowest score was physical pain, which limited patients at home and at work. Mental health score was surprisingly higher in comparison to physical health score. Depression, pessimism, sadness, and nervousness were not reported very often; instead, respondents tended to feel tired and weaker. The pre-treatment pain intensity was on average VAS 7.5 in both genders. The pain intensity did not decrease during treatment.

Conclusions: Pain intensity influences quality of life. The results show that pain affects physical and mental health. Respondents were often limited in the type of work they could do or did less than they had planned. They reported to be as healthy as or less healthy than a year earlier. Pharmacotherapy failed to mitigate the pain.

KEY WORDS

quality of life, chronic pain, back, Visual Analogue Scale, SF-36 scale, physical health, mental health

INTRODUCTION

Vertebrogenic diseases are among the most common reasons for primary care visits. Sixty to ninety per cent of the population will experience significant back pain in their lifetime (1). The difficulties recur and become chronic in a great number of patients. The disease limits patients' activities, and the most affected are patients aged over 40 years. The 1970s saw a sharp increase in short-term sick leave and higher numbers of patients with moderate or total degree of disability. It is the fifth leading cause of hospitalization. The disease has substantial socio-economic consequences for the patient (2).

The number of patients with chronic pain has been growing in modern society. Nowadays it affects 30% of the population, and 50% of the population of developed countries. Rokyta (3) reports that people are more sensitive to painful stimuli. The diagnostic process has improved with new advances in medical care. The cause of chronic pain may be hidden; the patient often visits the doctor repeatedly as the latter keeps on prescribing medication without any success. Chronic pain poses a challenge also because intensity tends to exceed the objective finding and is therefore difficult to treat (3).

The aetiology of pain is multifaceted. It can be caused by chemical, biological or physical noxae, mental disorders associated with pain perception (psychogenic pain). Pain is a signal (acute pain) and pathognomic (chronic pain) phenomenon. The most common chronic pain is vertebrogenic pain, chiefly low back pain (4). Pain has an informative and protective function. It affects mental health and life. Yet, pain is often underestimated by patients, and older people in particular consider it part of growing old.

Causes of Back Pain

The causes of chronic back pain are varied and need to be differentiated. Psychological and social factors, the risk of organic spinal disease, and non-degenera-

tive changes have been gaining prominence in recent years (5).

Typical risk factors for back pain include recurrent back pain, strenuous physical work, smoking, cardiovascular and respiratory diseases, psychosocial stress, job dissatisfaction, and socioeconomic status.

The exact source of pain cannot be determined in vertebrogenic diseases, yet this is why patients seek medical care. The pain is assumed to originate in the damaged parts of the spine and the surrounding tissue. Although imaging methods reveal an abnormal structure, it may not always be the cause of the pain.

Causes of back pain are specific and non-specific. Specific causes have identifiable progressive pathology with possible damage to nerve structures (for example intervertebral disc herniation, spinal stenosis, fractures, etc.). They constitute 15% of all cases of back pain. Non-specific symptoms of back pain are defined as pain without an identifiable specific anatomical or neurophysiological disorder. They represent 85% cases (2). Pain is chronic if it lasts more than three to six months (6). Goldberg et al. (7) report that one in five adults suffers from chronic or recurrent pain, and every year one in ten adults is newly diagnosed with chronic pain worldwide. Chronic pain arises from abnormal and unbalanced activity of activating and inhibiting processes involved in pain transmission. Immunity and inflammatory changes in the nervous system develop in chronic pain conditions (8). Back pain recurs in many patients, becomes chronic, causes long-term sickness, and complicates return to work. Pain is a comprehensive experience presenting in the biological, psychosocial, and economic area.

According to Bednařík and Vlčková (8), psychosocial factors play an important role in the transition to chronic pain. The factors include, for example, the patient's passive approach to treatment and rehabilitation, unrealistic expectations from the treatment, undesirable behaviour such as extremely high VAS scores (10), sleep disorders, depression, anxiety, and family background. Other factors are a compensatory tendency such as long-term sick leave and work-related factors such as job dissatisfaction, manual work, etc. The treatment and prevention of chronic back pain is multidisciplinary and is based on recommendations for the treatment of pain (8).

Treatment of non-specific back pain should be provided by a primary care physician. Patients are informed about the good prognosis of the disease, although some may suffer from recurrent or chronic problems. Exercise is recommended, while bed rest is not. Paracetamol and non-steroidal anti-inflammatory drugs are first choice medication (1). Adequate treatment of pain includes regular assessment of pain intensity. The most widespread instrument is the visual analogue scale (VAS). Other assessment scales are numerical pain scales, Melzack pain scales, facial expression scales for measuring pain, pain maps, etc.

In terms of health protection, quality of life in the physical, mental, and social areas manifests itself differently, as it is influenced by people's experiences, their perceptions, beliefs, and expectations. Each of these areas, or domains, is evaluated from the following two perspectives: The objective assessment of health and the subjective perception of health. Health expectations and the ability to cope with limitation and disability may significantly affect perception, health, and life satisfaction. Two people with identical disability can have very different quality of life (9).

Quality of life can be assessed objectively and subjectively. The most important is patients' subjective evaluation, how they perceive their own health, including the ability to find fulfilment in the work, family, and social environment. Patients' quality of life is assessed with questionnaires quantifying the impact of the disease on daily life based on formalized and standardized procedure. A large number of questionnaires are used in the industry to assess quality of life, such as the World Health Organization Quality of Life (WHO-QOL), Medical Outcomes Study 36 – Item Short Form (SF 36). Highly popular, the SF 36 has been used in more than 500 studies. It is a self-assessment tool allowing respondents to make their own assessment of their health. It was designed to measure and evaluate the benefits of health care in general. The SF 36 PF monitors the quality of life specifically in patients with back pain.

One of the crucial measures is patient education. The aim is to calm the patient down, eliminate their fear of a serious illness, encourage them to remain physically active and perform daily activities, gradually increase the intensity of the workload and, if possible, resume work soon. Bed rest in the case of intense pain is recommended for two, maximum four days. Patients are explained why to avoid activities that aggravate pain, such as sitting for long periods.

OBJECTIVE

To study the quality of life in patients with chronic back pain. Another goal is to find whether pharmacotherapy reduces pain.

METHOD

A quantitative survey research design was used to collect data. The first part of the questionnaire focuses on demographic data such as age, gender, education, mar-

ital and social status, duration of pain treatment, and pain intensity prior to treatment. The SF 36 PF is recommended for assessing quality of life in patients with back pain; however, it was not available at the time of our research.

The quality of life of the respondents was assessed based on the standardized Short Form Health Survey (SF-36), which is widely used in publications (10). This questionnaire was used in our research survey. The questionnaire served for the assessment of general quality of life in patients with chronic back pain. The questionnaire is available as free download from the website of the Institute of Health Information and Statistics of the Czech Republic (11). It was translated into Czech by Dr Zdeněk Sobotík and Dr Petr Petr. The questionnaire contains 36 questions and is divided into two main areas, which assess physical and mental health. Each area is split into four domains. The physical area focuses on physical activity, physical limitations, physical pain, and general health. The four domains of the mental health area include vitality, limitations caused by emotional problems, social functioning, and mental health. The questionnaire is easy to complete for respondents aged over 14 years.

The question asking patients to evaluate their health compared to a year earlier is not included in the assessment. The questions within the 8 domains are rated 0–100, where 0 is the lowest possible score and 100 the highest possible score. The domain scores are subsequently averaged. Lower scores indicate a lower quality of life. A score below 50 may be interpreted as below the general population norm. A lower SF 36 indicates poor health or long-term illness.

Pain was assessed before treatment and after four weeks of treatment using the Visual Analogue Scale (VAS). VAS is a "ruler" with centimetre numbers from 1 to 10, where 0 is "no pain at all" and 10 "the worst pain imaginable." The patient selects a number between 0 and 10 to describe as accurately as possible the intensity of their pain. We adapted the scale from a monograph (12). The respondents assessed their quality of life after four weeks of treatment. Demographic data were also gathered.

The sample consisted of patients who were being treated for the first time with chronic back pain in a pain clinic.

Respondents completed the questionnaire, put it in an envelope, and placed it in the designated box. A total of 100 questionnaires were used; the response rate was 80 (80%), while 5 questionnaires (5%) were discarded as incomplete. Seventy-five correctly completed questionnaires were used for the final assessment.

Ten percent of the patients in the sample were treated with oral analgesics, 80% received infusion therapy (saline in combination with Mesocaine, Novalgin, MgSO4 20%, Tralgit, Almiral, or Guajacuran) as prescribed in combination with oral analgesics. Caudal injection was administered in 5% of patients and opioids were administered transdermally in another 5% of patients. Bed rest was prescribed with the infusion therapy. Rehabilitation formed part of the treatment in selected cases. Post-treatment rehabilitation was prescribed for a third of patients.

The survey had been approved by the management of the health facility and carried out in a health facility in the Moravian-Silesian Region.

Statistical Analysis

The obtained data were entered in tables and the results were processed using Microsoft Office Excel 2007. The results of the survey are given in absolute and relative frequency with standard deviation.

RESULTS

The sample consisted of 75 patients with chronic back pain, of whom 43 (57%) were women and 32 (43%) were men. The participants were aged 18 years and older.

The majority of respondents were aged 61–75 years (a total of 43%) and the least represented category was 18–30 years (a total of 1%). In terms of social status, the largest number of respondents – 40 (53%) – were retired respondents, while 15 (55%) were employed, and the smallest group was the self-employed people – 4 (15%).

The majority of male respondents – 18 (57%) – reported to be vocationally trained, 9 (28%) graduated from a secondary school with school-leaving examination, and 1 (3%) only completed compulsory education. The majority of female respondents – 17 (40%) – reported to have graduated from a secondary school with school-leaving exam, 10 (23%) were vocationally trained, and only two women (5%) had a university degree.

The respondents were also questioned about how long they had been suffering from back pain. Nine (28%) men reported suffering from back pain for more or less 5 years, and eight specified the duration at 6 to 10 years (25%). The fewest men, a total of two (6%), reported to have back pain for 11 to 15 years. The largest group of women – 14 (33%) – reported to have had back pain for the longest time, while duration of up to 5 years was reported by 13 women (30%), and three women reported to have had back pain between 16 and 20 years (7%).

Table 1 Pre-treatment pain intensity

Pre-treatment pain intensity	Men		Women	
	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
0–2	0	0%	0	0%
3–4	0	0%	1	2%
5–6	9	28%	8	19%
7–8	15	47%	25	58%
9–10	8	25%	9	21%
Total	32	100%	43	100%

Legend: VAS pain scale

Table 2 Pain intensity before and during treatment

Gender	Pain intensity before treatment	Pain intensity during treatment
Men	7.4	7.6
Women	7.5	7.6
Total	7.5	7.6

Table 3 Assessment of the quality of life of all respondents

Total	PF	RP	BP	GH	VT	SF	RE	MH	SPH	SMH
Average	46.40	14.33	26.47	36.07	34.33	45.33	46.67	55.89	30.82	45.56
SD	±29.75	±29.49	±20.06	±18.61	±17.46	±24.73	±41.46	±18.58	±18.97	±20.70
Median	50.00	0.00	22.50	35.00	35.00	50.00	33.33	52.00	28.13	46.58

Legend: PF – Physical Functioning; RP – Role Physical; BP – Bodily Pain; GH – General Health; VT – Vitality; SF – Social Functioning; RE – Role Emotional; MH – Mental Health SPH – Physical Health; SMH – Mental Health.

Table 3a Assessment of quality of life by men

Men	PF	RP	BP	GH	VT	SF	RE	MH	SPH	SMH
Average	49.52	14.52	25.16	38.39	35.00	42.74	49.46	56.39	31.90	45.90
SD	±32.41	±28.94	±19.00	±18.72	±18.58	±24.34	±42.22	±18.33	±20.14	±21.98

Legend: PF – Physical Functioning; RP – Role Physical; BP – Bodily Pain; GH – General Health; VT – Vitality; SF – Social Functioning; RE – Role Emotional; MH – Mental Health SPH – Physical Health; SMH – Mental Health.

Table 4 Assessment of quality of life by women

Women	PF	RP	BP	GH	VT	SF	RE	MH	SPH	SMH
Average	44.65	13.95	27.50	35.00	33.84	47.38	44.96	55.91	30.28	45.52
SD	±27.67	±30.17	±20.95	±18.17	±16.80	±25.08	±41.22	±18.81	±18.21	±19.93

Legend: PF – Physical Functioning; RP – Role Physical; BP – Bodily Pain; GH – General Health; VT – Vitality; SF – Social Functioning; RE – Role Emotional; MH – Mental Health SPH – Physical Health; SMH – Mental Health.

Monitoring and evaluation of pain intensity before and during treatment

Pain intensity was assessed within the survey before the treatment and then four weeks after the treatment of the respondents. The patients assessed pain intensity using the VAS. Table 1 describes pain intensity in men and women prior to treatment. The respondents most often rated pain at 7–8. They consisted of 47 % men and 58 % women.

Table 2 describes average pain intensity prior to treatment. Men scored 7.4 and women 7.5. Both genders scored 7.6 during treatment.

Quality of life assessment

Quality of life was assessed using the SF 36. The average score of quality of life and domains for all respondents is given in Table 3. The quality of life of both men and women is subjectively rated low across all the domains. The lowest score (14.33 points) was given to RP (physical role), which indicates a higher restriction in daily activities and to BP (bodily pain) 26.47, which denotes the intensity of pain and pain-induced limitation and was among the lowest values affecting quality of life. The best subjective scores were recorded for MH (mental health) 55.89 and RE (role limitations due to emotional problems) 46.67. General physical health is lower (SPH 30.82 points) compared to general mental health (SMH 45.56 points). Table 3 shows domains with standard deviation related to the quality of life of all respondents.

Men (Table 3a) rated MH (mental health) and PF (physical activity) the highest, at 56.39 and 49.52 respectively. RP (role limitations due to physical health) scored the lowest at 14.52. Women (Table 4) rated MH (mental health) and RE (limitation caused by emotional problems) the highest at 55.91 and 44.96 respectively, while the worst rated was RP (limitation caused by physical health) at 13.95.

DISCUSSION

The aim was to map quality of life in patients with chronic back pain. Other goals were to determine whether pharmacotherapy reduced pain and whether pain intensity affects quality of life.

A quantitative method was used to meet the goals, consisting of a two-part anonymous questionnaire. The first part collected demographic data of respondents, and the other surveyed quality of life by using the generic standardized questionnaire SF-36. The respondents also completed the VAS to assess pain intensity. Pain intensity on this scale ranges from none to severe pain.

Quality of life is affected by physical and mental health, which was evaluated in 8 domains. Total physical health (SPH) is the result of assessment of physical activity, limitation caused by physical health, physical pain, and general health. Total mental health (SMH) is the result of assessment of vitality, limitation caused by emotional problems, social functioning, and mental health.

While evaluating physical activity, the respondents indicated whether their health limited them in daily activities such as walking, cycling, carrying shopping, bending, kneeling, etc. Although the respondents were limited and their average of 46.40 points is not very high, the respondents rated it the best of the four domains of physical health. Rokyta et al (13) point out that patients with chronic pain seek to reduce physical activity and increase rest in an effort to reduce pain while increasing therapeutic effect. They also state that 40% patients aged over 65 years have problems with daily activities. It is not surprising that our respondents, of whom 43% were aged between 61 and 75, did not score higher.

While assessing limitations caused by physical health, the respondents stated whether the time they spent working had been reduced or whether they had been limited concerning the type of work. Both the genders rated this domain the worst, at 14.33 points and a median of 0. It was the worst of the physical health domains and of all the eight domains in total. Our results match those of a study conducted by Antunes et al. (14) in patients with chronic back pain suffering from depression. Patients without depression scored much higher (median 50) compared to our respondents.

The domain with the lowest score of 26.47 points and a median of 22.5 was bodily pain. Respondents assessed pain over the previous 4 weeks and the extent to which pain had limited them at work and at home. According to Rokyta (13), physiotherapy and rehabilitation play a greater role in chronic pain than pharmacotherapy does. This is also evidenced by a study by Adorno et al. (15), who reported that the intensity of their respondent's pain dropped to 0.5 during treatment and that two months after the treatment the average pain intensity was 0.7. Tavares et al. (16) monitored patients with back pain, and the majority of the patients (78.3%) reported moderate to severe pain, which may imply various limitations.

General health was one of the low-rated domains. The respondents evaluated their general health. They were asked if they expected their health to deteriorate or become ill easier than other people. The majority of them evaluated their health as poor and assumed their health would deteriorate.

The results of domains affecting physical health were lower; physical health received 30.82 points and the median was 28.13. Physical health was rated lower also in the study by Stefane et al. (17), in all probability due to the old age of the respondents.

Vitality was the third domain with the lowest score – 34.33. The domain was low-scoring also in the study by Lamé et al. (18). Pain leads to decreased vitality, respondents feel more exhausted, tired, lethargic, and dejected.

Our research examined limitation caused by emotional problems, namely whether the respondents had problems with daily activities due to depression or anxi-

ety. Our respondents naturally experience pain-related emotional problems. Although with its 46.67 points it was the second best of all domains, the median 33.3 is comparable to the score of patients suffering from depression in the study by Antunes et al. (14).

Social functioning is affected by health or emotional problems. Pain interferes with normal social activities such as visiting with family and friends. Mental health with 55.89 points and a median of 52 was one of the best rated domains. The results above suggest that patients did not let pain make them feel nervous, pessimistic, sad, or prevent them from feeling happy and relaxed.

Domains affecting mental health scored higher, yet our results are nearly identical to those of depressed patients in the study by Antunes et al. (14).

As pain is subjective, it is impossible to determine exactly whether a patient's pain is truly as intense as reported. Respondents may have exaggerated pain intensity. This may be related to old age and greater polymorbidity (organic and degenerative disease) compared to younger adults. Pain intensity may have increased due to fatigue caused by insufficient rest, higher physical (work) load or by focusing closely on the pain itself. Rokyta (13) states that some patients consider pain as part of their lives and as a means of communication. These patients cannot be cured; physicians strive to protect them from aggressive treatments. Olejárová (19) draws attention to educating and motivating patients with intermittent back pain through adequate exercise therapy. A suitable sport or physical activity needs to be selected to load and strengthen the muscles of the spine evenly. The movement activities should be varied and complemented by compensatory exercise. Passive symptomatic treatment relieves the patient from difficulties, yet does not solve the problem of mechanical overload of the spine. The difficulties often recur and turn chronic if there is no exercise therapy. Raudenská (20) reports that chronic pain is, from the biological perspective, manifested in the somatic, emotional, cognitive, and behavioural component. The factors then interact.

Each of us has been in pain. It has been and will be a part of our lives, and so it is important to continue to study pain and its impact on quality of life. Good communication between healthcare professionals and patients also plays an important role, as early treatment of acute and chronic pain can eliminate or at least reduce its negative impact on quality of life. Hakl (21) argues that chronic pain treatment need not aim at complete recovery, but at improving the quality of life by reducing pain, having undisturbed sleep, and restoring physical, mental, and social fitness.

Research has shown that pain has a large impact on physical health and causes limitation to daily activities. Although mental health is less affected, as the results show, our respondents scored lower compared to other studies. Chronic patients and other hospitalized patients should therefore be able to see a psychologist in the medical facility.

Chronic pain lasts for more than 3 to 6 months and is often underestimated by patients as well as healthcare professionals. Rokyta (22) reports that 30% of the population on average has chronic pain. The growing number of chronic back pain is a worldwide problem and often leads to long-term sickness or disability.

The paper aimed to map quality of life in patients with chronic back pain. The SF-36 quality of life questionnaire, which was used in the research, shows that patients with chronic back pain score the lowest in physical role, namely that their physical health limits them at work or everyday activities. The second lowest score was physical pain, which limited patients at home and at work. Mental health score was surprisingly higher in comparison to physical health score. Mood and happiness were less affected by pain. Depression, pessimism, sadness, and nervousness were not reported very often; instead, the patients tended to feel tired and weak.

Another goal was to establish whether pharmacotherapy reduces pain. The pre-treatment pain intensity (Table 1) was identical in both genders. Some cases recorded a great improvement during treatment; the measured mean increased slightly during pharmacotherapy (Table 2). The results were surprising, as we had expected the intensity of pain to decrease during treatment. Bednařík and Vlčková (8) highlight the prominent role of psychosocial factors such as the passive attitude to treatment of a patient, undesirable behaviours etc. Half (55%) of our respondents are employed. Disease associated with pain changes the social position of patients, who lose their professional role, satisfaction, and prestige. Their role in the family gradually alters, they start to depend on others. The development of chronic pain is influenced by the socio-economic conditions of the patient, their family, and low levels of education. Manual workers are more prone to develop chronic pain and become disable (20). It is possible that the responses in our group were influenced by socio-economic factors, namely uncertain employment of pre-retirement patients.

Husky et al. (23) report that surveys of patients with back pain conducted in France, revealed that 67% of respondents felt under-medicated. The study used the SF 36. The results show that chronic pain is prevalent in women (41.3%) and increases significantly with

age (26.4%). Back pain was likewise associated with lower quality of life. Gatchel et al. (24) used the SF 36 in their study, which proved to have good psychometric properties for monitoring back pain. Fontal et al. reached similar conclusions in their paper (25). The SF 36 was also used by Adorno and Neto (15) in their study assessing quality of life in patients with chronic non-specific back pain. Chronic pain requires a different approach compared to acute pain. As complete recovery is impossible, the treatment of chronic pain aims to eliminate pain, reduce its intensity, and improve the quality of life (26).

As already mentioned, somatic and psychosocial factors do not present alone but intersect in chronic pain. A biopsychosocial approach applied to the development of the disease and to the treatment of chronic pain can better integrate psychotherapeutic approaches into the treatment itself (20).

Our analysis has multiple limitations. The research sample was small, and several survey responses were removed due to being incomplete. The study is therefore a simple probe into the issue. Future research should monitor patients with chronic back pain, establish the quality of life before and after treatment, monitor VAS, and compare the results.

It would also be desirable to determine whether respondents seek other, non-pharmacological methods (for example relaxation, acupuncture, physiotherapy) to reduce pain, and to determine their quality of sleep.

The low number of respondents prevents a simple generalization of the results, in spite of their statistical analysis. The results, however, point at selected important areas such as quality of life assessment, pain assessment, and therapeutic effect in back pain. We did not follow the pre-treatment quality of life in our survey.

CONCLUSION

Using the standardized questionnaire SF 36, the group of respondents under study was found to have a lower quality of life in Physical Health, compared to General Mental Health. Pain intensity was assessed with the VAS; and pharmacotherapy did not reduce pain intensity.

We did not manage to collect a sufficient number of studies to confirm or refute the effect of selected factors on the perception of pain intensity and on pharmacotherapy. Pain intensity affects quality of life. The results indicate that pain affects physical health in particular.

The authors hereby declare that they are not aware of any conflict of interest and that all ethical aspects and standards have been observed in the research.

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