Mindfulness in the treatment of chronic pain and improvement in the quality of life of both oncological and non-oncological patients

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ABSTRACT

Pain, which accompanies almost every third Pole, is an ever greater medical, psychological and social challenge. Relieving pain, and chronic one in particular, is now becoming one of the most important tasks for contemporary health care systems. It involves searching for efficacious therapeutic methods, not only with respect to pharmacotherapy, but also psychotherapy, physiotherapy, surgery, and a combination of those forms of treatment. *Mindfulness* is one of the newest modalities of cognitive behavioural therapy, and as a method that supports pharmacological pain management, it appears to be an interesting and efficacious way of reducing subjective pain experience in both oncological and non-oncological patients. It may also have a positive impact on the quality of life, reducing disease-related depressive symptoms and anxiety. Current study results encourage us to continue research in the field, and to further assess the efficacy of *mindfulness* trainings in different realms of medicine.

KEY WORDS: *mindfulness*, cognitive and behavioural therapy, MBSR, quality of life, chronic pain

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INTRODUCTION

Chronic pain and multi-disciplinary pain management

Epidemiological studies indicate that pain affects 22% of adult European population, while in Poland the percentage is even higher, amounting to 27% [1].

Pain is a common sensation, inseparable from human existence. It is a warning sign, and a reason for worry or increased vigilance. It frequently warns us against damage or is a sign of a pathological condition which progresses or has just set in. Chronic pain is one that lasts for more than three months, despite the fact that the tissues have healed up, is persistent or recurrent, requiring regular analgesic therapy. Chronic pain involves a complex pathomechanism, and does not perform the cautionary or protective function any longer, becoming a disease in its own right. It is often accompanied by diverse somatic symptoms, including sleep disorders, reduced level of daily activity, loss of appetite, lower sexual drive, personality changes, and mental disorders such as anxiety or depression. Thus, the problem of pain affects the broadly understood personal and professional life of those who experience it. Not only does it cause suffering to the patients, but it also brings about significant economic damage, like the one stemming from workplace absenteeism. Depending on the underlying mechanism, chronic pain can be divided into nociceptive pain (related to the irritation of nerve endings) and non-nociceptive pain. The latter can be further subdivided into neuropathic pain, resulting from peripheral or central nerve injury, and psychogenic pain, which is not associated with tissue injury, but whose symptoms are characteristic of such damage.

According to the guidelines of the International Association for the Study of Pain (IASP), chronic pain should be treated in specialized pain management clinics. John J. Bonica, the founder of IASP, and author of the concept of multidisciplinary pain management, believed that a comprehensive approach was necessary in the treatment of pain. He pointed to the fact that only a group of different specialists, including a psychiatrist and/or a psychologist, are capable of managing the complex phenomenon of chronic pain. Treatment of patients experiencing chronic pain involves not only the somatic aspect (involvement of the surgeons, anaesthesiologists, neurologists, and pharmacotherapy), but also psychological, social, environmental and rehabilitation interventions as well as work-related actions in the case of patients with disabilities caused by chronic pain [2]. Chronic pain pharmacotherapy, the basic and most extensively used method of pain management, has made use of the so called analgesic ladder for 30 years now, devised by the World Health Organization (WHO), and dividing the commonly used analgesics into three groups (steps), depending on the intensity of pain assessed with the Visual Analogue Scale (VAS). The ladder provides for the initial use of non-opioid analgesics, followed by weak and strong opioids at steps 2 and 3 [3]. An important developing trend, supporting pharmacotherapy, is psychotherapy, most frequently applied as a supportive method. However, it may also happen that due to medical contraindications, serious adverse events or personal circumstances, psychotherapy becomes a useful treatment alternative.

Quality of life as related to individuals experiencing chronic pain

Quality of life (QoL) is an ambiguous notion, encompassing both objective and subjective elements [4–6]. The objective QoL assessment is performed by third persons, i.e. the psychologist, physician or medical personnel involved. What is taken into account is the patient's general physical and psychological condition, social and economic circumstances. On the other hand, the subjective QoL assessment is related to the individual criteria defined and interpreted by patients.

The World Health Organization defines quality of life as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" [7]. To a large degree, quality of life depends on the personal philosophy of life, one's desires and expectations as well as upbringing and education [8]. According to Siegrist and Junge, quality of life includes three strongly interrelated elements, i.e. physical factors (disability and pain), psychological factors (mood, level of anxiety and depression) and social factors (degree of isolation from the environment, and opportunity to perform social roles) [9]. When disease sneaks into our lives, it impacts our QoL assessment, usually reducing it significantly. What we call it then is *health related quality of life* (HRQoL). Thus perceived quality of life is directly related to a somatic disease, but it also affects its course, and is a functional effect of the disease and its treatment, experienced by the patient. The definition includes four fundamental areas of existence, i.e. the physical condition and mobility, psychological health, somatic sensations, and social and economic conditions. A clinical approach to HRQoL involves an even broader context, including such areas as physical well-being, functional well-being, emotional well-being, ability to maintain relationships, performing social roles, satisfaction with treatment, intimacy and image of one's own body. Chronic pain, which is associated with other underlying diseases

(e.g. neoplastic disease, multiple sclerosis, diabetes) or is a disease in its own right, significantly reduces the quality of life, frequently interfering with all of the above mentioned areas.

Mindfulness or conscious attention

Mindfulness is a notion rendered into Polish as "attentiveness" (or sometimes as "attentive presence" or "complete awareness"). Based on the original concept of *mindfulness*, many important psychotherapeutic trends are now being developed, referred to as the third wave of cognitive behavioural therapy (CBT). They include, inter alia, the *Mindfulness Based Cognitive Therapy* (MBCT), *Acceptance and Commitment Therapy* (ACT) and the *Dialectical Behaviour Therapy* (DBT). Those types of therapy are rooted in the *Mindfulness Based Stress Reduction* (MBSR) training, which was one of the first programmes designed to treat psychological and psychosomatic conditions in the Western world. It was elaborated based on the selected Eastern meditation and therapeutic techniques. Jon Kabat-Zinn brought it into Western medicine towards the end of the 1970s. The classical approach to the *mindfulness* training, created by the founder of the Stress Reduction Clinic and the Center for Mindfulness in Medicine, Health Care, and Society at the University of Massachusetts Medical School, involves an 8-week cycle of therapeutic meetings. Every week, there is a 3-hour session, during which patients are psychoeducated with respect to the psychological aspects of their underlying disease, with attention being paid to individual cognitive tendencies to interpret different types of situations, and to the role and place of cognitive restructuring in the perception of selected life events, usually related to the underlying disease. At the same time, patients are instructed on the selected meditation techniques and elements of yoga, including some physical exercises, which increases their ability to experience themselves, others and world phenomena in a non-judgemental way, as if from the perspective of an external observer. Moreover, every participant of the training receives different individual tasks to be completed at home, practised every day for 30 to 45 minutes. Combining that approach with standard treatment increases the patient's acceptance, positive attitude and kindness towards oneself, the others, and the world. It helps develop patience and change the non-adaptive automatic patterns and behaviours into more adaptive forms.

Mindfulness is related to the empirical perception of everything that is beyond our expectations, and it has been defined in multi-faceted ways by many authors dealing with the subject matter. Kabat-Zinn [10] understands *mindfulness* as "paying attention in a particular way: on purpose, in the present moment, and non-judgementally", while Ray [11] believes that it is a way of experiencing the world and things "as they are". Dimidjian et al. [13] interpret *mindfulness* as an current experience and "the intentional process of observing, describing, and participating in reality, non-judgementally, in the moment, and with effectiveness". In psychology, *mindfulness* is defined as "the self-regulation of attention so that it is focused on immediate experience, thereby allowing for increased recognition of mental events in the present moment" and as "a particular orientation toward one's experience in the present moment, the orientation that is characterized by curiosity, openness, and acceptance" [12]. Epstein [14], on the other hand, treats *mindfulness* as "synthetic because it binds awareness to the object, neither holding on to, nor rejecting, whatever projects itself in the mind." Ability to be attentive makes it possible to detach oneself from reacting to particular stimuli, be it internal or external, in an automatic and habitual manner. The approach is all the more significant in a situation where we are exposed to negative stimuli. *Mindfulness* can extensively be applied to reduce symptoms, and to treat anxiety, depressive disorders, psychotic states, and post-traumatic stress. Many papers also indicate the possibility of using *mindfulness* techniques to reduce the level of emotional and physiological stress, as well as the stress experienced in situations involving different types of complaints emerging in the course of serious somatic diseases such as cancer, multiple sclerosis, and the like. It is because *mindfulness* is "an approach for increasing awareness and responding skilfully to mental processes that contribute to emotional distress and maladaptive behaviour" [15].

Stress is one of the problems affecting patients suffering from different somatic diseases and conditions (including pain). From a medical perspective, stress is seen as disturbed homeostasis under the influence of a physical or psychological factor. On the other hand, stress in psychology, according to Lazarus and Folkman [16], is a dynamic adaptive relationship between the resources of an individual and the requirements of a situation (or stressor; aversive stimulus), which is characterized by a lack of mental and/or physical balance. Reaction to stress is often automatic and unconscious. External stress factors affect the internal ones (cardiovascular, musculoskeletal, nervous, and immune systems). The hypothalamus-pituitary-adrenal axis is activated, triggering a series of physiological reactions which lead to internalization, and later inhibition of the reaction to stress, and subsequently to deregulation of the body's systems, manifesting itself in chronic hyperexcitability, risk of hypertension, arrhythmia, sleep disorders, and the like. As a result, and especially when a person is exposed to prolonged stress, one can observe different types of maladaptive behaviour, addictions, mental dis-

orders, and serious somatic diseases. The *mindfulness* approach and techniques teach us how to react to stress, thus normalizing the response of the hypothalamus-pituitary-adrenal axis. Thanks to the new regulation skills, it is possible to activate the body in a conscious way (muscle tonus, breathing control etc.). *Mindfulness* teaches one to perceive an extended context of the situation, including strategies focused on emotions, and strategies focused on the problem, searching for new possibilities, and offering the opportunity to regain mental balance and homeostasis of the body.

Studies demonstrate that *mindfulness* trainings are helpful in the treatment of patients suffering from chronic pain, neoplastic diseases, arterial hypertension, cardiovascular diseases, GI disorders, and some skin conditions [17]. They are also efficacious in psychiatry and psychotherapy, and are used in different forms of CBT as one of the methods preventing depression relapses, supporting the treatment of anxiety, obsessive-compulsive disorders, psychoactive substance use, eating disorders, reducing the elevated level of stress, and improving the patients' self-esteem [18–21].

STUDIES ON THE ROLE AND EFFICACY OF *MINDFULNESS* TRAININGS IN THE TREATMENT OF PAIN AND IMPROVEMENT IN THE QUALITY OF LIFE

As history has it, various novel forms of psychotherapy were first tested in groups of people suffering from mental disorders, later followed by those with other psychosomatic conditions. Their usefulness as supportive therapy has also been tested with reference to the treatment of somatic diseases.

The first studies on the efficacy of the *mindfulness* programme in medicine date back to the second half of the 20th century, with the published papers devoted chiefly to the treatment of depression, anxiety, and substance abuse. Presently, there are more and more studies on the efficacy of the *mindfulness* method in bringing about the experience of pain relief. One of them is the work of Zeidan et al. [22], which demonstrated that cognitive interpretation of pain depends on many factors, including attention, core believes, one's conditioning, expectations, mood, and ways of emotional response regulation. In that context, *mindfulness* was found to help patients in their cognitive change of the evaluation of pain, providing them with new methods of coping with its symptoms. Mehling et al. [23], in turn, revealed that chronic lower back pain was reduced as a result of different breathing techniques, including *mindfulness* trainings, thanks to the self-regulation of attention and the patients' emotional states. Those findings indicate that not only pharmacotherapy, but also cognitive behavioural therapy (including the third wave of CBT therapies like *mindfulness*), may improve the quality of life, and reduce chronic pain in somatic and psychosomatic patients.

Hence, searching for new ways of pain control, and chronic pain in particular, a review of selected studies involving *mindfulness* trainings, different forms of *mindfulness* therapy, and newly emerging CBT trends has been conducted with a view to assess their efficacy in the management of chronic pain associated with cancer as well as with non-oncological diseases, with special consideration given to the improvement in the patients' quality of life.

Chronic pain treatment in non-oncological patients

Studies on the treatment of chronic pain in non-oncological patients involve attempts at verifying the efficacy of third wave psychotherapy in patients diagnosed with different conditions. Current research focuses on issues such as fibromyalgia, spine diseases, migraine, rheumatoid arthritis, and others. Results of those studies suggest that *mindfulness* trainings may help reduce the level of pain experienced [24–26, 29, 31, 33, 35, 36], improve the quality of life (especially the physical, cognitive and emotional aspects of it) [24–26, 28–36], reduce the symptoms of depression [25, 26, 29, 33] and the level of anxiety [25, 29, 33], often associated with chronic pain. Table 1 presents the detailed information on the studies involving non-oncological patients.

TABLE 1.
Studies on pain management and quality of life in non-oncological patients, involving *mindfulness* trainings and other new modalities of CBT therapy.

Author	Study type	Diagnosis	Group profile (age/SD)	Intervention	Group size	Therapeutic protocol	Control group	N	Results
Goldenberg, 1994 [24]	CCT	Fibromyalgia	SG: 46/9,9 CG: 47.2/11.8	MBSR	7–12	10 2-hour sessions	Patients on the waitlist: 18 Patients who declined: 24	SG: 79 CG: 42	Pain: VAS, $p < 0.05$ QoL: FIQ, $p < 0.05$

Bruckstein, 1999 [25]	RCT	Chronic pain	56.4/13.7	MBSR		8 1.5-hour sessions	Psychoeducation, social support	SG: 15 CG: 7	Pain: VAS, $p < 0.05$ Depression: BDI, $p < 0.05$ Anxiety: SCL-90, $p < 0.05$ QoL: SIP, $p < 0.05$
Astin, 2003 [26]	RCT	Fibromyalgia	47.7/10.6	MBSR + qigong	10–20	8 2.5-hour sessions	Psychoeducation, social support	SG: 32 CG: 33	Pain: SF-36, $p < 0.05$ Depression: BDI, $p < 0.05$ QoL: FIQ, $p < 0.05$
Dahl, 2004 [27]	RCT	Chronic pain	SG: 36.7/12.5 CG: 44.4/13.6	ACT	IND	4 1-hour sessions	Standard treatment	SG: 11 CG: 8	Pain: NRS, $p = ns$ QoL: FIQ, $p = ns$ ↓Reduction in absenteeism, $p < 0.05$ ↓Reduction in the intake of analgesics, $p < 0.05$
McCracken, 2005 [28]	IB	Complex chronic pain	44.4/10.7	ACT		3 or 4 full weeks		SG: 108	Pain: NRS, patients accepting T1 pain ↓ reported reduction in T2 pain, $p = ns$ Physical QoL: SIP, $p < 0.05$
Grossman, 2007 [29]	CCT	Fibromyalgia	SG: 54.4/8.3 CG: 48.8	MBSR	10–15	8 1.5-hour sessions	Psychoeducation, social support	SG: 39 CG: 13	Pain: VAS, $p < 0.05$ Depression: HADS, $p < 0.05$ Anxiety: HADS, $p < 0.05$ QoL: HRQoL, $p < 0.05$
McCracken, 2007 [30]	other	Severe chronic pain, patients with motor disability	47.6/11.6	ACT		3 full weeks, 80 hours		SG: 53 CG: 234	Pain: NRS reduction, ↓, $p = ns$ Depression: BDI reduction, ↓, $p = ns$ Anxiety: PASS reduction, ↓, $p = ns$ Physical QoL: SIP reduction, ↓, $p = ns$ Clinical changes observed, ns
Gardner-Nix, 2008 [31]	CCT	Chronic pain	SG: 51 CG: 52	MBSR	10–20	10 2-hour sessions	Patients on the waitlist	SG: 99 (57 – telemedicine) CG: 59	Pain, spectacular reduction, ↓, $p < 0.05$ Pain: NRS, $p < 0.05$ Cognitive QoL: improvement, ↑, $p < 0.05$ Physical QoL, $p < 0.05$
Morone, 2008 [32]	RCT	Chronic pain of the lumbar spine	74.9/(64–84)	MBSR		8 1.5-hour sessions	Patients on the waitlist	SG: 19 CG: 18	Pain: MPQ-SF, $p = ns$ ↑ Improvement in CPAQ, $p < 0.05$ ↑ Greater involvement in exercises, $p < 0.05$ Physical QoL: SF-36, $p < 0.05$
Vowles, 2008 [33]	other	Chronic pain	47.3/11.4	ACT		3 or 4 full weeks		171	Pain: NRS, $p < 0.05$ Depression: BCMDI, $p < 0.05$ Anxiety: PASS, $p < 0.05$ physical QoL: SIP, $p < 0.05$
Wicksell, 2008 [34]	RCT	Patients with cervical vertebral injuries	SG: 48.2/7.8 CG: 55.1/11.2	ACT	IND	10 1-hour sessions	Patients on the waitlist and standard treatment	SG: 11 CG: 9	Pain: VAS, $p = ns$ ↓ Reduction in pain-related disability Fear of pain: HADS, $p < 0.05$ QoL: SWLS, $p < 0.05$
Vowles, 2011 [35]	other	Chronic pain		ACT		3 or 4 full weeks		108	Pain: ↑ increased acceptance, $p < 0.05$ Physical and emotional QoL: SIP, $p < 0.05$
Omidi, 2014 [36]	RCT	Headache	SG: 34.5/2.41 CG: 32/3.2	MBSR		8 2-hour sessions	Standard treatment	SG: 28 CG: 32	Pain: IHD, $p < 0.05$ ↑ Increase in mindful attention, MAAS, $p < 0.05$

Legend: CCT – controlled clinical trial; RCT – randomized clinical trial; SG – study group; CG – control group; ACT – Acceptance and Commitment Therapy; MBSR – Mindfulness-Based Stress Reduction; IND – individual sessions; BCMDI – British Columbia Major Depression Inventory; BDI – Beck Depression Inventory; CPAQ – Chronic Pain Acceptance Questionnaire; FIQ – Fibromyalgia Impact Questionnaire; HADS – Hospital Anxiety and Depression Scale; IHD – International Headache Classification Subcommittee Diary Scale for Headache; MAAS – Mindful Attention Awareness Scale; MPQ-SF – McGill Pain Questionnaire; NRS – Numerical Rating Scale; PASS – Pain Anxiety Symptoms Scale; SCL-90 – 90-item Symptom Checklist; SF-36 – Short Form (36) Health Survey; SIP – Sickness Impact Profile; SWLS – Satisfaction With Life Scale; VAS – Visual Analogue Scale; ns – statistically non-significant.

Improvement in the quality of life and reduction of pain in oncological patients

For a dozen or so years now, studies involving the use of *mindfulness* techniques and new CBT modalities have also been conducted in the field of oncology. Inclusion of psychotherapeutic methods in oncological treatment is first and foremost aimed at reducing distress experienced by cancer patients. To date, papers analysing the significance of mindfulness-based psychotherapy have involved patients suffering from breast, ovarian, prostate, endometrial, and rectal cancers as well as from non-Hodgkin lymphoma and nasopharyngeal neoplasms. The available study results appear to indicate that a 6- to 8-week MBSR training has a positive impact on the cancer patients' quality of life, both in terms of its physical and psychological aspects [37–45], additionally reducing the level of disease-related anxiety [38, 39, 43, 44]. Moreover, the studies also demonstrate that participation in *mindfulness* trainings significantly reduces the symptoms of depression [37–40, 43, 44], and the level of subjectively experienced pain [45]. What encourages one to study the matter further is the fact that several studies demonstrated that apart from the change in the subjective assessment of particular psychological factors, there was also significant reduction in blood cortisol levels, which may be treated as an objective indicator of the stress experienced [40, 42]. Table 2 presents studies involving MBSR training in oncological patients.

TABLE 2.
Studies on the quality of life, distress and pain in oncological patients, involving *mindfulness* trainings and other new modalities of CBT therapy.

Author	Study type	Type of cancer	Group profile (age in years)	Status of oncological treatment	Adjunctive oncological treatment	Interventions and therapeutic protocol	Control group	N	Results
Speca, 2000 [37]	RCT	Breast cancer, ovarian cancer, prostate cancer, NHL, melanoma, endometrial cancer, cervical cancer, rectal cancer, and others	50.8	No data	No data	MBSR, 7 1.5-hour sessions	Patients on the waitlist	90	Mental QoL, $p < 0.05$ Physical QoL, $p < 0.05$ Depression: POMS, $p < 0.05$ ↓ Stress reduction: SOSI, $p < 0.05$
Shapiro, 2003 [38]	RCT	Breast cancer	50 (20–65)	Within a 2-year period since completion of therapy	No data	MBSR, 6 2-hour sessions plus 1 day of silence – 6 hours	Psycho-education	172	Emotional QoL, $p < 0.05$ ↑ Increase in sleep duration and quality, $p < 0.05$ Anxiety: STAI, $p < 0.05$ Depression: BDI, $p < 0.05$
Carlson, 2005 [39]	CCT	Breast cancer, prostate cancer, ovarian cancer, NHL	54	No data	No data	MBSR, 8 1.5-hour sessions; 1 day of silence – 3 hours		63	Depression: POMS, $p < 0.05$ Physical QoL: SOSI, $p < 0.05$ ↓ Stress reduction, SOSI, $p < 0.05$ Anxiety: SOSI, $p < 0.05$ ↓ Fatigue reduction, $p < 0.05$
Carlson, 2007 [40]	CCT	Breast cancer, prostate cancer	54.5	Minimum 3 months following surgery, without CHT, RTH	18 patients – tamoxifen	MBSR, 8 1.5-hour sessions; 1 day of silence – 3 hours		59	QoL: EORTC, $p < 0.05$ ↓ Reduction in cortisol levels, $p < 0.05$ Depression: POMS, $p < 0.05$ ↑ Increase in sleep duration and quality, $p < 0.05$
Garland, 2007 [41]	other	Breast cancer, prostate cancer, GI cancer, lung cancer, nasopharyngeal cancer, brain cancer, skin cancer, and others	52.17	No data	No data	MBSR, 8 1.5-hour sessions, 1 day of silence – 3 hours in week 6/7	Art therapy	SG: 60 CG: 44	QoL, FACIT, $p < 0.05$ Physical QoL: SOSI, $p < 0.05$ ↑ Increase in mental strength following a traumatic experience

Witek-Janusek, 2008 [42]	CCT	Breast cancer – early stages	55	10 days following surgery	Before adjuvant therapy	MBSR, 8 2.5-hour sessions	Standard treatment + control group without cancer	66	QoL: WHO-5, $p < 0.05$ ↓ Reduction in cortisol levels, $p < 0.05$
Lengacher, 2009 [43]	RCT	Breast cancer	57.5/9.4	Within an 18-month period since completion of therapy	No data	MBSR, 6 2-hour session	Standard treatment	SG: 41 CG: 43	Depression: CESD, $p < 0.05$ Anxiety: STAI, $p < 0.05$ Physical QoL: SF-36, $p < 0.05$ Pain, p = ns
Hoffman, 2012 [44]	RCT	Breast cancer	49	Following hospital treatment, stages 0–III	No data	MBSR, 8 1.5-hour sessions plus 1 day of silence – 6 hours	Patients on the waitlist, standard treatment	SG: 103 CG: 111	Depression: POMS, $p < 0.05$ Anxiety: POMS, $p < 0.05$ QoL: FACT-B, $p < 0.05$ QoL, WHO-5, $p < 0.05$
Rahmani, 2015 [45]	RCT	Breast cancer	30–50	No data	No data, patients could not undergo earlier psychotherapy	MBSR, 8 2-hour sessions plus yoga	Standard treatment	SG; 12 CG: 12	QoL: QLQ-C30, $p < 0.05$ Emotional, social and cognitive QoL, $p < 0.05$ Pain: QLQ-BR23, $p < 0.05$ ↓ Fatigue reduction, $p < 0.05$ ↑ Improved assessment of one's own body, $p < 0.05$

Legend: CCT– controlled clinical trial; RCT – randomized clinical trial; SG – study group; CG – control group; CHT – chemotherapy; RTH – radiotherapy; ACT – Acceptance and Commitment Therapy; MBSR – Mindfulness-Based Stress Reduction; NHL – non-Hodgkin lymphoma; BDI – Beck Depression Inventory; CESD – Center for Epidemiologic Studies Depression Scale; EORTC – European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire; FACIT – Functional Assessment of Chronic Illness Therapy; FACT-B – Functional Assessment of Cancer Therapy-Breast; POMS – Profile of Mood States; SF-36 – Short Form (36) Health Survey; SOSI – Symptoms of Stress Inventory; STAI – Spielberger State Anxiety Inventory; WHO-5 – WHO 5-item Well-Being Questionnaire; ns – statistically non-significant.

DISCUSSION

In summary, pain is a complex phenomenon which takes its toll on the physical, psychological, social, occupational, and other areas of life. It affects both individuals suffering from neoplastic disease as well as those with other somatic diseases, especially chronic ones. Medicine has long been searching for ever more efficacious methods to alleviate pain, including not only pharmacotherapy, but also surgery, physiotherapy, and psychological techniques. Presently, combined therapy, including diverse methods, seems to be the most advisable approach.

The present paper has discussed studies on pain management and QoL improvement in oncological and non-oncological patients, involving the most recent modalities of CBT therapy, and in particular mindfulness-based therapy and ACT. The above presented review indicates that both forms of psychotherapy, teaching patients new cognitive interpretations of the experienced pain or distress, and introducing various relaxation and meditation techniques to them, are now becoming interesting complementary therapies which can support the existing therapeutic methods applied in the treatment of chronic pain and/or improvement of the patients' quality of life.

Despite the fact that studies involving *mindfulness* techniques have been conducted on different cohorts of patients since the 1970s, many questions remain unanswered. However, we know much more today, and can confidently claim that the methods help reduce the level of stress, change the subjective experience of pain, improve the patients' quality of life, and in many cases also reduce the symptoms of depression and the level of anxiety. It is worth emphasising that the studies conducted to date have been based on different modifications of the MBSR programme, different in terms of the duration of therapy, intensity of therapeutic sessions, and types of additional interventions, which is why it is difficult to decide beyond any doubt which specific therapeutic protocol is the most efficacious in chronic pain patients, offering them the greatest number of psychological and clinical benefits. Moreover, even though the analysed papers had

the form of controlled and randomized studies, they did not include information on whether the study subjects received simultaneous pharmacological pain treatment, which is undoubtedly their weak point.

It is also worth noting that the analysis of the available works goes to show that the new CBT modalities are currently more likely to be applied in the pain management of non-oncological patients, experiencing chronic pain due to somatic diseases other than cancer. The studies largely confirm the efficacy of MBSR, ACT and other forms of *mindfulness* trainings in pain management. On the other hand, studies involving oncological patients discuss the usefulness of the above mentioned methods in pain reduction much less frequently, focusing more on the verification of their efficacy in the reduction of anxiety and depression, and improvement in health-related quality of life.

A vast majority of the analysed studies suggest that cognitive behavioural therapy is an interesting and efficacious method of managing psychosomatic and psychological conditions and disorders, and may thus effectively support the basic oncological treatment oriented on medical goals. CBT is also a therapy which has been documented to help in a multidisciplinary approach to the management of chronic pain of different aetiologies, which is why cooperation of pain management specialists with CBT psychotherapists and psychologists who apply the *mindfulness* techniques appears to be an interesting option, worth following and developing with "conscious attention". The present paper has a clinical dimension, but is also aimed at encouraging the readers to continue research in the field, allowing us all to explore the nature of psychological support in pain management and improvement of the quality of life of both oncological and non-oncological patients.

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