

The Effect of Pain Beliefs on Pain Levels in Cancer Patients

Kanser Hastalarında Ağrı İnançlarının Ağrı Düzeyine Etkisi

Dilek YILDIRIM¹, Dilek BAYKAL², Burcu DEDEOĞLU DEMİR³

ABSTRACT

Objective: The study was conducted to determine the effect of pain beliefs on pain levels in cancer patients.

Methods: This descriptive and correlational study was completed with cancer patients (n=147) that treated in 3 different hospitals on oncology and chemotherapy units. Data were collected using the Socio-demographic Information Form, Visual Analogue Scale and Pain Beliefs Scale. Descriptive data were given as numbers, percentages and averages. Correlation test was used to determine the relationship between the pain level and the Pain Beliefs Scale.

Results: The patients' Pain Beliefs Scale scores of those who adapted to the disease were statistically significantly lower than those who could not (p=.028). Moreover, it was determined that those had stressful lives had statistically significantly higher Pain Belief Scale score that those who had not (p=0.025). It was found that the score that the patients got from the VAS pain intensity scale was 7.41±2.50, and it was high. The total score they got from the Pain Beliefs Scale was 4.23±.37. It was determined that there was a positive correlation between intensity of pain and organic beliefs in the subscale of the pain beliefs scale (r=.179, p<.05).

Conclusions: It was determined that organic pain beliefs of cancer patients have an impact on the level of pain. The pain beliefs of cancer patients were affected by adaptation to the disease and stressful life. Organic pain beliefs of cancer patients have an impact on the level of pain. Considering the relationship between individual's pain belief and pain level in cancer pain management, planning treatment and nursing care is suggested.

Key-words: Pain, pain beliefs, pain severity, cancer patients.

ÖZET

Amaç: Bu çalışma kanser hastalarının ağrı inançlarının ağrı düzeyine etkisinin belirlenmesi amacıyla gerçekleştirildi.

Yöntem: Tanımlayıcı ve korelasyonel tipteki bu çalışma, 3 farklı hastanede onkoloji ve kemoterapi birimleri ile tedavi edilen kanser hastaları (n = 147) ile tamamlandı. Veriler hastalarla yüzyüze görüşülerek Sosyo-demografik Bilgi Formu, Görsel Analog Ölçeği ve Ağrı İnançları Ölçeği kullanılarak toplandı. Tanımlayıcı istatistikler sayı, yüzde ve ortalama olarak verildi. Ağrı düzeyi ile Ağrı İnançları Ölçeği arasındaki ilişkiyi saptamak için korelasyon testi kullanıldı.

Bulgular: Hastaların Ağrı İnançları Ölçeği puanları incelendiğinde, hastalığa uyum sağlayanların sağlamayanlara göre daha düşük olduğu görüldü (p =.028). Ayrıca stresli yaşamları olanların olmayanlara göre Ağrı İnanç Ölçeği puanlarının istatistiksel olarak anlamlı derecede yüksek olduğu belirlendi (p = 0.025). Hastaların VAS ağrı şiddeti ölçeğinden aldıkları puan ortalamalarının 7.41±2.50 olduğu belirlendi. Ağrı İnançları Ölçeğinden aldıkları toplam puan 4.23±.37'dir. Ağrı inancı ölçeğinin alt ölçeğinde ağrının şiddeti ile organik inançlar arasında pozitif yönde bir korelasyon olduğu belirlendi (r =.179, p<.05).

Sonuç: Kanser hastalarının organik ağrı inançlarının ağrı düzeyi üzerinde etkisi olduğu belirlendi. Kanser hastalarının ağrı inançları hastalığa uyum ve stresli yaşamdan etkilenmektedir. Kanser hastalarının organik ağrı inançlarının ağrı seviyesi üzerinde etkisi vardır. Kanser ağrı yönetiminde tedavi ve hemşirelik bakımını planlarken bireyin ağrı inancı ile ağrı düzeyi arasındaki ilişki göz önüne alınmalıdır.

Anahtar kelimeler: Ağrı, ağrı inançları, ağrı şiddeti, kanser hastaları.

¹ Department of Nursing, Faculty of Health Sciences, Istanbul Sabahattin Zaim University, Istanbul, Turkey, dilek.yildirim@izu.edu.tr
ORCID: 0000-0002-6228-0007

² Department of Nursing, Faculty of Health Sciences, Istanbul Atlas University, Istanbul, Turkey, ORCID: 0000-0001-5965-9318

³ Department of Nursing, School High of Health Sciences, Istanbul Arel University, Istanbul, Turkey, ORCID: 0000-0003-1836-2897



INTRODUCTION

Pain that negatively affects the patient and his family physically, psychologically and economically is one of the most common and most distressing symptoms in cancer patients (Mercadante et al., 2015).

The incidence of pain varies depending on the type and cause of cancer. It was reported that the incidence of pain is 70% in patients receiving head-neck cancer treatment, 60% in gynaecological cancer and 59% in gastrointestinal cancers (Paice & Ferrell, 2011). In some studies, it was shown that one-third of patients who are in active treatment period and 60-90% of advanced patients experience moderate and severe pain, and in 75% of patients, experienced pain is in the form of pain attacks 2 or 3 times a day scored 5 points or more according to the numeric scale (Mercadante, Prestia & Casuccio, 2016; Van den Beuken-van Everdingen et al., 2016). Despite the improvements in cancer and pain treatment, recovery in cancer pain does not exceed 25%. Assuming that 4-5 million individuals die from cancer every year in worldwide, the fact that these patients spend the last period of their lives in aches and pain is considered both a health problem and a social problem (Mercadante et al., 2015; Lee et al., 2015).

Regardless of the cause, pain affects people's life quality negatively, and it may cause insomnia, fatigue and many psychological problems. Therefore, it is significant to be closely monitored and managed cancer pain (Mercadante et al., 2015).

It is known that pain is not only an indicator of tissue damage, but also a complex concept that is affected by coping skills, socio-economic status, cultural history, psychological variables, beliefs and intellectual situations. Therefore, cancer pain needs to be handled with physiological, emotional, psychosocial, cognitive, behaviour and spiritual aspects (Mercadante et al., 2015; Paice & Ferrell, 2011).

The patient's beliefs, expectations, attitudes to cope with pain, social support, diagnoses, health assurances, and even employers' approach are effective on the patient's pain control (Cornally & McCarthy, 2011). Pain beliefs stand out among the cognitive factors. Beliefs take their source from social psychology as a concept and are accepted as the basic building block of the thought system carried by the person in a cognitive perspective. Ellis stated that pain beliefs can be cognitions, thoughts, attitudes and emotions. According to Ellis, beliefs are not fixed facts, but they are hypotheses that can be observed, tested and changed (Ellis & Feltham, 1997; Sharp, 2001). According to the results of various studies conducted with pain beliefs, it was foreseen that those who quit the treatment have stronger negative pain beliefs, and these beliefs would decrease during treatment (Rainville et al., 2004). In the study of Walsh and Radcliffe (2002), it was stated that patients with high scores of Pain Belief Scale Organic Beliefs had higher levels of physical disability, and their organic pain beliefs were associated with physical disability. Moreover, it was signified that the beliefs of patients about pain nature and its treatment can be altered

with multidisciplinary pain management programs based on cognitive-behavioural interventions (Walsh & Radcliffe, 2002). Furthermore, in the study of Cornally and McCarthy (2011), it was stated that individuals who believe that the pain is from organic origin were more likely to request for help (Cornally & McCarthy, 2011). Therefore, in cancer patients who experience pain most severely and frequently, seeing their pain beliefs in this respect is significant in the management and treatment of pain. Health professionals' consciousness of cancer patients' beliefs regarding pain will help to improve patient compliance to pain treatment and to make decision together in order to ensure pain management. However, there is no study result in the literature that evaluating the relationship between pain beliefs and pain levels in the cancer patients. In the light of this information, the study was conducted to determine the effect of pain beliefs on pain levels in cancer patients.

METHODS

Study Design

This descriptive and correlational study was carried out to determine the effect of pain beliefs on pain levels in cancer patients. The study was completed with cancer patients that treated in 3 different hospitals on oncology and chemotherapy units between January-May 2020. Data were collected using the Socio-demographic Information Form, Visual Analogue Scale and Pain Beliefs Scale.

Participants and Procedures

The sample size was determined as 86 participants according to the analysis performed in the G-power statistical software with a significance level of 0.05, 95% power (G*Power Version 3.1.9.2 statistical software). The study was conducted with the participation of 147 cancer patients.

Patients who accepted to participate in the study, who were over 18 years old, who were diagnosed with cancer at least one month ago, without communication and psychological problems, and whose pain was 4 or more according to VAS were included in the study. After patients were informed about the study, their consent was obtained. The data were obtained by the researchers face to face by using the questionnaire method. The whole procedure took about 15 minutes.

Ethical Considerations

In addition, after the participants were informed about the research, consent was obtained. Written ethics committee numbered 31.01.2020/12 was obtained from the Haliç University Ethics Committee in order to conduct the research.



Data Collection Tools

In the study, “Socio-demographic Information Form”, “VAS” and “Pain Beliefs Scale” were used as data collection tools.

Socio-demographic Information Form

This form was prepared by researchers, by reviewing the relevant literature and including questions that may affect patients’ pain experience and beliefs. In the form, there are total of 14 questions about socio-demographic features such as age, gender, marital status, educational status, income status and social support status and about diagnosis, pain experience, medication used and determination of pain level.

Visual Analog Scale (VAS)

Pain levels of patients were evaluated by using VAS. It enables to show the pain of patient with numbers. The scale starts with the absence of pain (0) and reaches the level of unbearable pain (10). In the study, pain levels between 1-4 points were evaluated as mild, between 5-7 points as moderate and between 8-10 points as severe (Arslan et al., 2016).

Pain Beliefs Scale

The scale was developed in 1992 by Edwards et al. in order to understand the psychological and organic beliefs about the cause of pain. Turkish validity and reliability study has been done (Sertel Berk & Bahadır, 2007). In the validity and reliability study of the pain beliefs scale, the Cronbach alpha coefficient that intended to evaluate the internal consistency

of the scale was found 0.71 for the psychological beliefs subscale and 0.64 for the organic beliefs subscale.

The scale evaluates two different types of beliefs as psychological and organic towards the origin and consequences of the pain. Scale has a Likert type assessment that ranging from 6 to 0 as always, almost always, often, sometimes, rarely and never and consists 12 items. The scores related to the sub-scores as psychological and organic pain belief are obtained from the scale. There are no breakpoints for these scorings. The rise in the score that obtained from the subscale of the scale indicates that the pain belief of subscale is high, while decrease in the score indicates low pain belief about subscale (Sertel Berk & Bahadır, 2007).

Data Analysis

SPSS 25.0 package program was used to evaluate the data. Descriptive data were given as numbers, percentages and averages. Shapiro-Wilk test was used for normality analysis of data. Correlation test was used to determine the relationship between the pain level and the Pain Beliefs Scale. All results were considered meaningful at $p < .05$ and a confidence interval of 95%.

RESULTS

When the socio-demographic characteristics of the patients were examined, it was observed that the mean age was 59.98 ± 12.88 , most of them were women ($n=88$, 59.9%) and married ($n=136$, 92.5%). It was determined that most of the patients ($n=78$, 53.1%) were primary school graduate, their expenses were equal to their income, and their income met their expenses (Table 1).

**Table 1. Socio-demographic Characteristics of Patients**

Characteristics	Min-Max	$\bar{X} \pm Sd$
Age	18-94	59.98±12.88
	n	%
Gender		
Female	88	59.9
Male	59	40.1
Marital Status		
Single	11	7.5
Married	136	92.5
Educational Status		
Illiterate	2	1.4
Literate	3	2.0
Primary school graduate	78	53.1
Secondary school graduate	5	3.4
High school graduate	22	15.0
College or higher	38	25.9
Employment Status		
Working	106	72.1
Not working	41	27.9
Economic Status		
My income meets expenses	72	49.0
My income not meet my expenses	2	1.4
My income equals my expenses	73	49.7

When the findings related to diagnosis and the treatment of the patients were examined, it was determined that the majority of patients (43.5%, n=64) were diagnosed with lung cancer, 65.3% of them (n=96) were in stage 1-2, 52.4% of them (n=77) receives chemotherapy treatment, and 29.9% of them (n=4) had disease 4 years and over (Table 2).

Table 2. Features of Patients Regarding Diagnosis and Treatment

Features	n	%
Disease Diagnosis		
Lung cancer	64	43.5
Laryngeal cancer	23	15.6
Breast cancer	22	15.0
Multiple myeloma	24	16.3
Prostate cancer	14	9.5
Stage of Disease		
Stage I	35	23.8
Stage II	61	41.5
Stage III	31	21.1
Stage IV	20	13.6
Treatment		
Chemotherapy	77	52.4
Radiotherapy	47	32.0
Chemotherapy + Radiotherapy	23	15.6
Disease and Treatment Period		
0-6 month	33	22.4
6 month-1 year	37	25.2
1-3 years	33	22.4
4 years and over	44	29.9

When the patients' Pain Beliefs Scale and their characteristics related to the disease were compared, it was

found that the scores of those who adapted to the disease were statistically significantly lower than those who could



not ($p=.028$). Moreover, it was determined that those had stressful lives had statistically significantly higher Pain Belief Scale score than those who had not ($p=0.025$). There was no statistically significant difference between patients'

Pain Beliefs Scale and their level of perception of the disease, their state of adaptation to treatment and their status of doing regular health checks (Table 3).

Table 3. Comparison of Patients' Pain Beliefs Scale and Their Features Related Disease

	n (%)	Pain Beliefs Scale Total Scores		
		$\bar{X} \pm Sd$	p	Statistics Value
Their State of Adaptation to the Disease				
Yes	73 (49.7)	4.16±.40	.028	2.221 ¹
No	74 (50.3)	4.30±.32		
Their State of Perception of Disease				
Untreatable disease	50 (34)	4.28±.42	.430	.849 ²
Requires long-term treatment	76 (51.7)	4.21±.36		
Easy to treat	21 (14.3)	4.17±.37		
Their State of Adaptation to the Treatment				
Yes	79 (53.7)	4.22±.35	.648	-.428 ¹
No	68 (46.3)	4.24±.39		
Their State of Doing Regular Health Checks				
Yes	121 (82.3)	4.21±.37	.391	.858 ³
No	26 (17.7)	4.32±.38		
Their State of Stressful Life				
Yes	106 (72.1)	4.34±.34	.025	-2.170 ¹
No	41 (27.9)	4.19±.38		

¹t test in independent groups,

² One way Anova

³Mann Whitney U test

It was found that the score that the patients got from the VAS pain intensity scale was 7.41 ± 2.50 , and it was high. The total score they got from the Pain Beliefs Scale was $4.23 \pm .37$ (Table 4).

Table 4: Pain Relief Scale of Patients and VAS Pain Severity Scores

Scale and Subscales		$\bar{X} \pm Sd$
VAS Pain Severity		7.41±2.50
Pain Beliefs Scale (Total)		4.23±.37
Subscales	Organic Beliefs	4.17±.51
	Psychological Beliefs	4.29±.78

Sd: Standard deviation

It was determined that there was a positive correlation between intensity of pain and organic beliefs in the subscale of the pain beliefs scale ($r=.179$, $p<.05$) (Table 5).

**Table 5. The Relationship between Pain Beliefs Scale and VAS Pain Severity**

Scales	VAS Pain Severity	
	r	p
Organic Beliefs	.179	.030
Psychological Beliefs	-.047	.574
Pain Beliefs Scale (Total)	.055	.508

Pearson Correlation Analysis was used, * $p < .05$

DISCUSSION

In this research, it was focused on the effect of the pain beliefs of cancer patients on pain levels and determination of other factors that could affect the pain beliefs. In the study, it was found that Pain Beliefs Scores of those who adapted to the disease was statistically significantly lower than who could not ($p = .028$). In the study conducted with patients who had chronic low back pain, it was foreseen that who quit the treatment and who did not adapt to the disease had stronger pain beliefs, and this beliefs would decrease during treatment (Rainville et al., 2004). The study findings have shown that pain beliefs play a role in determining adaptation to the disease. However, this is important in the terms of revealing that beliefs can change the cancer pain treatment process. This result of the study is significant especially in terms of increasing the patient's compliance to the treatment by pain beliefs affecting adaptation to the disease (Stroud et al., 2000).

In the study, it was determined that Pain Beliefs Scale scores of those who had stressed life were statistically significantly higher than those who had not ($p = 0.025$). In the literature, it have been shown that behavioural, cognitive and emotional factor have direct effects on pain response, compliance and response to the treatment. These factors have effects on pain response indirectly by influencing the neurochemical factors associated with the sympathetic nervous system (Öztürk Birge & Mollaoğlu, 2018). Pain may be depend on tissue damage, or it may develop due to an unpleasant and disturbing affection (Koçoğlu & Özdemir, 2011). It was also known that pain that cannot be cured or relieved will increase the stress level (Henderson et al., 2013). Therefore, it is significant to evaluate both organic and psychologic components of pain together (Syrjala et al., 2014). In a different study, similar to the finding of this study, it was reported that as the stress level of the patients increases, their pain beliefs also increase (Yüksel, Tambağ & Karakoyun, 2019). In the study of Ulus et al. (2014), they were spotted that 51% of the elderly believed that "it is easier to cope with the pain when they are happy" and "the pain is a sign that something wrong with the body". In the same study, it was determined that there was a negative relationship between stress and psychological beliefs scores, and psychological belief scores decreased as the intensity of pain increased (Ulus et al., 2014). Our study results also show that both organic and psychological factors affect pain management and pain beliefs.

In the study, it was determined that there was a positive correlation between pain intensity and organic beliefs in the subscale of Pain Belief Scale ($r = .179$, $p < .05$).

Organic beliefs score based on the perception that the cause of the pain is originated from "injury in body, harm". People have the belief that the more injuries there are, the more pain there is. According to this, it was observed that biomedical thinking dominates the management of organic beliefs, eliminating the problem causing pain in the pain control, and treatment and activity/exercise control are at the foreground (Wals & Radcliffe, 2002; Baird & Haslam, 2013). In the study of Edwards (1992), who developed the pain beliefs scale, it was stated that chronic pain patients expressed organic factors much more (Sertel Berk & Bahadır, 2007).

In the study conducted by Wals and Radcliffe (2002), it was stated that organic beliefs about pain are related to physical function level, and as the organic pain beliefs decreased, an increase in functional level was observed; and it was emphasized that the positive pain belief improves perception about functional capacity, increases the level of activity and reduces the applications to health institutions (Wals & Radcliffe, 2002). Similar to the study finding, in the study of Babadağ and Alparşlan (2017), it was observed that the mean score of organic beliefs increased significantly as the pain intensity of patients increased (Babadağ & Alparşlan, 2017). In another study, similarly, it was reported that there was a significant positive relationship between pain intensity and organic pain beliefs (Yüksel, Tambağ & Karakoyun, 2019). In a different study conducted on patients with algology, it was found that those who believed that pain control was in the person itself had low organic beliefs. According to this, it was reported that these people associate the cause of pain with external factors rather than just injury and damage in the body (Babadağ, Balcı & Güleç, 2015). This finding of our study can also be interpreted as the fact that patients link cause of their pain to organic reasons more.

CONCLUSION

It was observed that the pain beliefs of cancer patients were affected by adaptation to the disease and stressful life, while it was not affected by their levels of perception of the disease, adaptation to the treatment, and doing regular health checks. It was determined that organic pain beliefs of cancer patients have an impact on the level of pain. It was recommended to conduct epidemiological studies with broader participation



towards pain characteristics and beliefs of cancer patients, and to evaluate cultural determinants in these studies. Furthermore, considering the relationship between individual's pain belief and pain level in cancer pain management, planning treatment and nursing care is suggested.

DECLARATION OF CONFLICT INTERESTS

The authors declare no conflicts of interest.

ACKNOWLEDGMENT

We would like to thank all participants.

REFERENCES

- Arslan, M., Albaş, S., Küçükerdem, H., Pamuk, G., & Can, H. (2016). The evaluation of the effectiveness of palliative pain management in cancer patients with visual analogue scale. *Family Practice and Palliative Care*, 1(1), 5-8.
- Babadağ, B. & Alparslan, G. B. (2017). Pain beliefs of nurse students. *Sted*, 26(6), 244-250.
- Babadağ, B., Alparslan, G. B., & Güleç, S. (2015). The relationship between pain beliefs and coping with pain of algology patients'. *Pain Management Nursing*, 16(6), 910-919.
- Baird, A. J., & Haslam, R. A. (2013). Exploring differences in pain beliefs within and between a large nonclinical (workplace) population and a clinical (chronic low back pain) population using the pain beliefs questionnaire. *Physical therapy*, 93(12), 1615-1624.
- Cornally, N., & McCarthy, G. (2011). Chronic pain: the help-seeking behavior, attitudes, and beliefs of older adults living in the community. *Pain Management Nursing*, 12(4), 206-217.
- Ellis, A. & Feltham, C. (1998). Rational Emotive Behavior Therapy Which Psychotherapy?: Leading Exponents Explain their Differences. *British Journal of Guidance & Counselling*, 26(2), 51-68.
- Henderson, J. V., Harrison, C. M., Britt, H. C., Bayram, C. F., & Miller, G. C. (2013). Prevalence, causes, severity, impact, and management of chronic pain in Australian general practice patients. *Pain Medicine*, 14(9), 1346-1361.
- Koçoğlu, D., & Özdemir, L. (2011). The relation between pain and pain beliefs with socio-demographic-economic characteristics at the adult population. *Agri*, 23(2), 64-70.
- Lee, S. H., Kim, J. Y., Yeo, S., Kim, S. H., & Lim, S. (2015). Meta-analysis of massage therapy on cancer pain. *Integrative cancer therapies*, 14(4), 297-304.
- Mercadante, S., Lazzari, M., Reale, C., Cuomo, A., Fusco, F., Marchetti, P., ... & Iaffaioli, V. (2015). Italian Oncological Pain Survey (IOPS): a multicentre Italian study of breakthrough pain performed in different settings. *The Clinical journal of pain*, 31(3), 214-221.
- Mercadante, S., Prestia, G., & Casuccio, A. (2016). Nurse-based monitoring and management of breakthrough pain in an acute pain relief and palliative care unit. *Hospital practice*, 44(4), 203-206.
- Öztürk, A. B., & Mollaoğlu, M. (2018). Pain beliefs of patients and the nonpharmacological methods they use to manage the pain. *The journal of the Turkish Society of Algology*, 30(2), 84-92.
- Paice, J. A., & Ferrell, B. (2011). The management of cancer pain. *CA: A cancer journal for clinicians*, 61(3), 157-182.
- Rainville, J., Hartigan, C., Martinez, E., Limke, J., Jouve, C., & Finno, M. (2004). Exercise as a treatment for chronic low back pain. *The Spine Journal*, 4(1), 106-115.
- Sertel Berk, H. Ö., & Bahadır, G. (2007). Chronic pain experience and pain beliefs. *Pain*, 19(4), 5-15.
- Sharp, T. J. (2001). Chronic pain: a reformulation of the cognitive-behavioural model. *Behaviour Research and Therapy*, 39(7), 787-800.
- Stroud, M. W., Thorn, B. E., Jensen, M. P., & Boothby, J. L. (2000). The relation between pain beliefs, negative thoughts, and psychosocial functioning in chronic pain patients. *Pain®*, 84(2-3), 347-352.
- Syrjala, K. L., Jensen, M. P., Mendoza, M. E., Yi, J. C., Fisher, H. M., & Keefe, F. J. (2014). Psychological and behavioral approaches to cancer pain management. *Journal of Clinical Oncology*, 32(16), 1703.
- Ulus, B., Irban, A., Bakırcı, N., Yılmaz, E., Uslu, Y., Yücel, N., & Eti Aslan, F. (2014). Determination of pain characteristics, pain belief and risk of depression among elderly residents living at nursing home. *Turkish Journal of Geriatrics*, 17(2), 180-187.
- Van Den Beuken-Van, M. H., Hochstenbach, L. M., Joosten, E. A., Tjan-Heijnen, V. C., & Janssen, D. J. (2016). Update on prevalence of pain in patients with cancer: systematic review and meta-analysis. *Journal of pain and symptom management*, 51(6), 1070-1090.
- Walsh, D. A., & Radcliffe, J. C. (2002). Pain beliefs and perceived physical disability of patients with chronic low back pain. *Pain*, 97(1-2), 23-31.
- Yüksel, A., Tambağ, H., & Karakoyun, A. (2019). The Relationship between Pain Beliefs and Psychiatric Symptoms of Patients with Fibromyalgia Syndrome. *Düzce Tıp Fakültesi Dergisi*, 21(3), 238-242.