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RESEARCH

DETERMINATION OF PAIN CHARACTERISTICS, PAIN BELIEF AND RISK OF DEPRESSION AMONG ELDERLY RESIDENTS LIVING AT NURSING HOME

ABSTRACT

Introduction: The aim of this study was to determine pain frequency, pain characteristics, pain beliefs and depression status of elderly people living in nursing homes.

Materials and Method: This descriptive study was carried out in nursing homes affiliated with Istanbul Metropolitan Municipality. Elderly people who were residents in these nursing homes were included in the study. Data were collected with the Descriptive Data Form, Pain Evaluation Form, Geriatric Depression Scale and Pain Beliefs Questionnaire.

Results: One hundred forty-six people were included in the study. 76% of the elderly people complained about pain, especially leg pain. This was severe chronic pain of a high intensity (Numerical Rating Scale 5-7). This chronic pain adversely affected their daily activities. The risk of depression even higher in older patients with neurological disease. Half of the elderly residents (51%) stated that it was easier to cope with the pain when they were happy, and also that pain was an indicator of having something wrong with their body.

Conclusion: In the light of this study, we can say that pain is a frequently seen symptom in elderly residents living in nursing homes. The psychological status of the residents has a great impact on the management of their pain. Therefore people's psychological status and their beliefs related to pain should also be assessed.

Key Words: Aged; Pain, Depression.

ARAŞTIRMA

HUZUREVİNDE YAŞAYAN YAŞLILARDA AĞRI ÖZELLİKLERİ, AĞRI İNANÇLARI VE DEPRESYON RİSKİNİN BELİRLENMESİ

Öz

Giriş: Bu araştırmanın amacı huzurevinde yaşayan yaşlılarda ağrı sıklığı, ağrı inançları ve depresyon riskini değerlendirmektir.

Gereç ve Yöntem: Tanımlayıcı olarak planlanan bu araştırma İstanbul Büyükşehir Belediyesi'ne bağlı huzurevlerinde yapıldı. Veriler, Tanıtıcı Veri Formu, Ağrı Değerlendirme Formu, Geriatrik Depresyon Ölçeği ve Ağrı İnançları ölçeği ile toplandı.

Bulgular: Çalışmaya 146 birey dahil edildi. Huzurevinde yaşayan yaşlıların %76'sında en çok bacak bölgesinde yerleşim gösteren ve 5-7 şiddetinde (Numerical Rating Scale) olan, günlük aktivitelerini olumsuz yönde etkileyen kronik ağrıları olduğu saptandı. Depresyon riski nörolojik hastalığı olan yaşlılarda daha yüksek olarak saptandı (p=0,020). Yaşlıların yarısı (%51,0) "mutlu iken ağrı ile baş etmenin daha kolay" olduğuna ve "ağrı çekmenin vücutta bir şeylerin ters gittiğinin işareti" olduğuna inanmaktadır.

Sonuç: Bu çalışmanın ışığı altında huzurevinde yaşayan yaşlılarda ağrının sık görülen bir semptom olduğu söylenebilir. Bireyin psikolojik durumunun ağrı yönetimi üzerinde büyük bir etkisi olduğu görülmüştür. Bu nedenle bireylerin psikolojik durumları ve ağrı inançları da değerlendirilmelidir.

Anahtar Sözcükler: Yaşlı; Ağrı; Depresyon.

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INTRODUCTION

Pain and depression are declared to be the most common diagnoses for elderly people who stay in nursing homes. Researches about nursing home residences in the World and in Turkey have shown that the frequency of pain in old people is 25-50% (1-3).

Pain and depression in old people negatively affect their everyday life. It is declared that the frequency of depression in old people who stay in nursing home residences in Turkey is even higher, between 36% and 76% (2,4). Depression can be the reason for chronic pain, just as depression might be observed in old people who suffer from chronic pain. Since pain and depressive symptoms in old people are generally observed at the same time, in addition to the feature of pain, their pain experience, depression and pain beliefs should be taken into consideration while evaluating pain (2,4).

In this study, besides pain frequency we also aimed to determine pain characteristics, beliefs about pain and the risk of depression at elderly people living in nursing homes affiliated to Istanbul Metropolitan Municipality.

MATERIALS AND METHOD

This descriptive study was carried out between March and July 2012 at Istanbul Metropolitan Municipality Nursing Homes. Ethics Committee approval from the researchers' university (ATADEK, 2012-298) and approval from executives of nursing homes affiliated with Istanbul Metropolitan Municipality where the study would be carried out were obtained. In the process of data collection, it was explained to all individuals that participation was voluntary. Written informed consent was obtained from individuals participating in the study. The 146 people who agreed to participate in the research were included in study group. Data collection tools included the Descriptive Data Form, Pain Evaluation Form, Geriatric Depression Scale and Pain Beliefs Questionnaire.

In the Descriptive Data Form, which was developed by the researchers there are questions about demographic information (age, gender, marital status, chronic disease, medication) and pain experience. In the Pain Evaluation Form there are questions about the region, quality, severity, conditions which increase and decrease pain, and methods consulted in order to relieve pain (taking pain-killers, alternative medicine practices, and exercise).

The 30-question Geriatric Depression Scale (GDS) was developed by Yesavage et al.(3); Turkish validity and reliabil-

ity was established by Ertan . Giving a reply of "no" to positive questions and "yes" to negative questions yields 1 score on the evaluation scale, and having a score of 6 and above is accepted as significant for depression symptoms (4).

The Pain Beliefs Questionnaire was developed by Edwards et al. (1992)(5) and its validation and reliability were established in Turkey by Berk (6). The Pain Beliefs Questionnaire has 12 questions which evaluate two different belief types, psychological and organic, for the source and results of pain.

Data was collected by the researchers through face to face interviews; each interview lasted 20-30 minutes. Data were analysed using SPSS (Statistical Package for Social Sciences for Windows) 13. Apart from descriptive statistics (frequency, percentage, average, standard deviation), the Kolmogrov – Smirnov distribution test, Pearson chi-square test, Fisher Exact test (independent samples), t-test, one- way ANOVA test, Pearson correlation analysis and linear regression analysis were used to analyse the normality of the distributions and test for main effects and correlations.

RESULTS

Thirty point eight percent of the individuals who participated in the study were female and 69.2% were male. According to the American Psychological Association classification system, 12.3% were adults (under 65 years of age), 45.2% were young old (65-74), 35.6% were middle old (75-84), and 6.8% were oldest old (85 and above). In terms of educational status, 34.2% were literate, 42.5% were elementary school graduates, 8.2% were secondary school graduates, 8.9% were high-school graduates, and 6.2% were university graduates. Body Mass Index (BMI) of more than half of the elders was 25 and above. Eighty point eight percent of participants stated they had experienced pain in the last month and 47.9% had leg pain, 16.4% had backache, and 13.7% had pain in the front part of their body.

According to the Numerical Rating Scale, 27.1% of individuals had pain of 5-7 severity and 22% had pain of 8-10 severity. With respect to pain type and duration, it was determined that 76% of participants had chronic pain, 4.8% had acute pain, 30.1% had continuous pain, and 45.9% had discontinuous pain. (Table 1)

Table 1 shows the demographic characteristics and pain severity of individuals in the study group. When the age of individuals was used as the dependent variable, there was no statistically significant relationship between age and severity of pain (p=0.305). In the young old group 46.9% complained
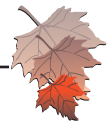
Table 1— Pain Severity by Demographic Characteristics.

		Mild Pain		Severe Pain		Unbearable Pain		
		n	%	n	%	n	%	
Age	< 65	6	10.0	6	18.8	5	19.2	X^2=7.174
	65-74	25	41.7	15	46.9	9	34.6	p=0.305
	75-84	24	40.0	11	34.4	8	30.8	
	>85	5	8.3	–	–	4	15.4	
Gender	Female	23	38.3	9	28.1	8	30.8	X^2=1.116
	Male	37	61.7	23	71.9	18	69.2	p=0.572
Education Status	Literate	18	30.0	15	46.9	9	34.6	X^2=10.676
	Elementary school	32	53.3	12	37.5	8	30.8	p=0.221
	Secondary school	2	3.3	3	9.4	3	11.5	
	High school	5	8.3	2	6.3	3	11.5	
	License	3	5.0	–	–	3	11.5	
BMI	18-25	26	43.3	13	41.9	11	42.3	X^2=2.624
	25-30	22	36.7	10	32.3	6	23.1	p=0.623
	30 +	12	20.0	8	25.8	9	34.6	

Numeric Rating Scale: 1-4 mild pain, 5-7 severe pain, 8-10 unbearable pain.

of severe pain and 34.6% of unbearable pain. When pain severity is analyzed according to gender, 28.1% of those who had severe pain were female and 71.9% were male; 30.8% of those who had very severe unbearable pain were female, 69.2% were male. There was no statistically significant relation between gender and pain severity (p= 0.572).

When pain severity was analyzed according to educational status, 46.9% of those who had severe pain were literate, 37.5% were elementary school graduates, 9.4% were secondary school graduates, and 6.2% were high-school graduates. Thirty-four point six percent of those who had very severe pain were literate, 30.8% were elementary school graduates, 11.5% were secondary school graduates, and 11.5% were high-school graduates. There was no statistically significant relationship between educational level and pain severity (p=0.221).

With respect to factors that increase pain, we found that walking (28.4%), standing (17.8%), and climbing stairs (13.6%) increase pain, while resting (50.3%), lying down (15.2%), sleeping (13.1%) and doing exercise (11.7%) decrease pain. When the effects of pain on daily life were analyzed, we determined that it caused limitation of movement among 61.9% of participants, insomnia among 44.1% and loss of strength in arms and legs among 43.2%.(Table 2)

When pain beliefs of the study participants were analysed, we observed that the beliefs that "It is easier to cope with pain

when we are happy" and "Pain is a sign of disease" were expressed at the same frequency (51%), the belief that "feeling depressed worsens pain" was expressed by 48%, "feeling pain is a sign that something is going wrong within the body" was expressed by 47%, and the belief that "amount of pain depends on tissue damage" was expressed by 45%.

Nearly half of the elderly participants (42%) answered "always" to the statements "Being worried worsens pain", "It is easier to cope pain when we are happy", "Thinking of pain worsens it", and "Feeling depressed worsens pain," which are included within the psychological belief group. T-test results showed that psychological belief score means differed significantly, according to participants' pain status (t=1.559; p=0.045). The psychological belief scores of participants who did not have pain were higher than those for participants who did have pain (sd=1.583). When correlation between pain severity and pain belief was searched, It was revealed that only psychological belief has a negative impact on the pain severity (r=-0.241; p=0.003) (Table 3, 4).

It was determined that 86.3% of the elderly participants residing in nursing homes had one or more chronic diseases, and 51.4% had signs of depression. Statistical analysis revealed that 58.7 % of participants with chronic pain and 57.1% of participants with acute pain also had symptoms of depression (X^2=12.496, p= 0.002). With respect to medication status, 27.4% of participants did not use any drugs for

Table 2— Results of the Pain Beliefs Questionnaire.

Organic Beliefs	Ajwaxs %	Almost Always %	Often %	Sometimes %	Rarely %	Neyer %	Mean
1. Pain is the result of dam age to the tissues of the body	42	12	8	15	13	10	2.74
2. Physical exexc.ise makes, pain, worse	25	14	7	16	10	29	3.57
3. It is impossible to do much for oneself to relieve pain	25	8	12	21	12	22	3.53
5. Experjencing pain is a sign that something is wrong with the body	47	16	11	10	5	10	2.42
7.Being in pain prevents you from enjoying hobbies and social activities	38	12	10	16	5	19	2.95
8. The amount of pain is related to the, amount of damage.	45	15	16	14	5	4	2.34
10. It is impossible to control pain on your own	33	9	11	20	12	16	3.16
11. Pain is a sign of illness	51	18	9	11	5	6	2.21
Psychological Beliefs							
4. Being anxious makes pain worse	41	12	6	14	10	16	2.89
6. When relaxed pain is easier to cope with	51	16	6	8	10	9	2.36
9. Thinking about pain makes it worse	42	16	6	10	12	14	2.75
12. Feeling depressed makes pajn seem	48	14	9	12	8	10	2.47

Table 3— Pain Characteristics and Depression in Elderly.

		Depression				
		No		Yes		
		n	%	n	%	
Pain type	Chronic pain	45	41.3	64	58.7	X^2=12.496
	Acute pain	3	42.9	4	57.1	p=0.002
Pain pattern	Continuous	17	39.5	26	60.5	X^2=13.775
	Intermittent	28	42.4	38	57.6	p=0.008
	Instant	2	66.7	1	33.3	

Table 4— Correlation Between Pain Severity and Subgroup of Pain Belief.

		Pain Severity	Organic Belief Score	Psychological Belief Score
Pain severity	r	1.000	-0.075	-0.241
	P	0.000	0.365	0.003
	N	146	146	146
Organic belief score	r	-0.075	1.000	0.400
	P	0.365	0.000	0.000
	N	146	146	146
Psychological belief score	r	-0.241	0.400	1.000
	P	0.003	0.000	0.000
	N	146	146	146

pain, 41.8% used only one drug, and 30.8% used two or more types of drug. When drug use was analyzed according to group, it was determined that the most used drugs were in the anti-depressant group (28.8%), 4.1% were nonsteroid anti-inflammatory drugs (NSAI), 3.4% were antiepileptic drugs, and 3.4% were analgesic drugs. When methods used by participants to reduce pain were analyzed, it was determined that 69.6% used pain-killers and 10.4% preferred physical treatment methods.

Pain and depression influence physical functions of the elderly negatively. In this study it was observed that neurological disease and chronic pain are factors that influence depression. In a study by Gümüş, acute or chronic pain influences depression (2). In the present study, it was determined that risk of depression is higher among the elderly who have chronic pain (p=0.002). Esp. it was frequently seen in neurological disease when compared with other chronic diseases (Table 5).

Table 5— Correlation of Depression and Chronic Diseases.

		Absent		Present		
		n	%	n	%	
Cardiovascular system	No	20	48.8	21	51.2	X^2=0.001
	Yes	50	48.5	53	51.5	p=0.563
Osteoarthritis	No	53	49.1	55	50.9	X^2=0.037
	Yes	17	47.2	19	52.8	p=0.500
Diabetis mellitus	No	56	48.7	59	51.3	X^2=0.002
	Yes	14	48.3	15	51.7	p=0.567
Urinary system	No	52	48.6	55	51.4	X^2=0.000
	Yes	18	48.6	19	51.4	p=0.573
Central & Peripheral nervous system	No	57	54.3	48	45.7	X^2=4.998
	Yes	13	33.3	26	66.7	p=0.020
Psychiatric	No	44	53.0	39	47.0	X^2=l.519
	Yes	26	42.6	35	57.4	p=0.144
Oncology	No	68	47.9	74	52.1	X^2=2.144
	Yes	2	100.0	–	–	p=0.235
Vitamine deficiency	No	49	49.5	50	50.5	X^2=0.099
	Yes	21	46.7	24	53.3	p=0.447
Respiratory system	No	51	48.1	55	51.9	X^2=0.040
	Yes	19	50.0	19	50.0	p=0.495
Anemia	No	55	48.2	59	51.8	X^2=0.029
	Yes	15	50.0	15	50.0	p=0.513
Gastritis	No	53	53.0	47	47.0	X^2=2.524
	Yes	17	38.6	27	61.4	p=0.079
Others	No	53	48.6	56	51.4	X^2=0.000
	Yes	17	48.6	18	51.4	p=0.575
Number of diseases which patient have at the time of questionaires	0	3	30.0	7	70.0	
	1	11	91.7	1	8.3	
	2	13	43.3	17	56.7	
	3	12	60.0	8	40.0	X^2=14.341
	4	14	48.3	15	51.7	p=0.073
	5	8	42.1	11	57.9	
	6	5	33.3	10	66.7	
	7	2	33.3	4	66.7	
	8	2	66.7	1	33.3	

DISCUSSION

The frequency of pain reported by the elderly varies between 45% and 80% according to age, gender and the region where they live. In a study carried out with the elderly in 7 cities in Turkey, it was reported that pain prevalence is 89% and chronic pain prevalence is 65% (2). Seventy–eighty five percent of the elderly living in nursing homes have chronic pain that disrupts activities of daily life and influences their quality of life (1,7). In a study carried out at a nursing home in Holland by van Herk et al., pain prevalence was recorded as 66% (8); in a study carried out in America in 2005 by Cadogan it was 51% (9); and in a study carried out in Canada in 2003-2005 the prevalence of musculoskeletal pain was 64% (10).

When the pain severity of elderly people was analyzed, it was determined that nearly half of those who participated in the study had pain of 5-10 severity according to the nominal pain scale. Studies have reported medium levels of pain severity among the elderly (8,9). In the present study, chronic pain prevalence was determined to be 76%.

Perception of pain is influenced by many factors such as educational status, gender, and previous pain experiences. In this study, we determined that age, gender, educational status and BMI do not have a significant effect on pain severity. In a literature review by Takai et al., it was reported that age did influence pain severity (11).

We determined that 47.9% of participants had pain in their legs. In different studies it has generally been reported that pain is generally arthralgia (74.2%), which is followed by pain in the knees (19.5%) and hips (16.5%) (12).

In the literature it has been reported that 59% of pain in elderly people (age 65 and over) is caused by osteoarthritis (8). Elderly people who are suffering from pain may have sleep disorders, hopelessness, loss of self-confidence and/or depression and even lose the ability to carry out activities of daily life (13).

In relieving pain with drugs, opioid (narcotic analgesics – NA), non-steroid anti-inflammatory (NSAI) drugs, local anesthetics, and adjuvant group drugs are generally used. In clinical studies, it has been found that the efficiency of treatments decreases as a person gets older. In spite of this, the first attempt at relieving pain among the elderly is generally drug treatment (14).

Since all pharmacokinetic phases of drugs with respect to metabolism, absorption, excretion and distribution volumes are influenced by old age, drug interactions are observed more frequently. Since drug doses applied to the elderly may show relatively higher blood levels and a longer half-life, low doses are suggested at the beginning (15).

Methods apart from drugs are commonly used among the elderly for relieving pain. When non-drug methods for relieving pain were analyzed, it was observed that 30% of people pray, 26.2% do exercises, 23.3% have a massage, and 18.4% prefers thermal springs or healing water (16).

The present study determined that most of the elderly living in nursing homes (86.3%) have one or more chronic disease. In similar studies, this frequency varies between 47.9% and 68.4%. Chronic disease among the elderly was higher in our study (11).

Chronic diseases which increase together with old age result in multiple drug use. In this study it was observed that 41.8% of the elderly used at least one drug and the drug group which is most commonly used is anti-depressants. In the studies of 23 nursing homes in Turkey, it was found that the most commonly used drugs were cardiovascular system drugs and analgesics (20.8%) (12). The findings from the present study differ from those in the literature.

Pain influences physical functions of elderly people negatively. In this study it was determined that it causes insomnia, limitation of movement, and loss of strength in arms and legs. In the literature it has been reported that pain decreases sleep and activity levels and causes loss of strength in arms and legs. The literature findings and the results of this study are similar (1,2,7).

When factors that increase pain were analyzed, we found that walking, standing, and climbing stairs increase pain, and that the elderly generally (69.6%) preferred using pain-killers in order to cope with it. Gümüş et al. reported that the factor which had the greatest effect on inducing pain was an increase in activity (2). Our result is similar to the literature findings.

Pain may cause social isolation, anxiety and depression among the elderly, or conversely, the reason for chronic pain may be depression. For example, the prevalence of depression among elderly people living in nursing homes in Turkey was found to range from 36.0% to 76.0% (2). Pain and depression influence quality of life and physical functions of the elderly negatively; therefore, depression should definitely be investigated when evaluating pain findings among individuals (14).

Another factor which influences pain perception among the elderly is previous experiences and pain beliefs of the individual. It has been reported that pain, which is thought to emerge as a biological reaction depending on tissue damage, in fact is related to genetic, emotional, cultural, belief and

individual factors, and therefore, although pain is related to physiological reasons, the pain experience and severity should be analyzed according to individual differences (13).

In a study by Koçoğlu and Özdemir in which pain beliefs were analyzed, it was reported that socio-demographic and economic status influence various properties of pain. For example this study found that being old, female, and having low educational and economic levels are factors which increase the experience of pain. Moreover, it was also emphasized that it is important in pain evaluation to know the interpretations of elderly people and the meaning they attribute to pain (17).

In the literature, it has been reported that organic beliefs about pain are related to physical function level, and as organic pain belief decreases there is an increase in functional level (17). In this study, the belief that "Pain results from tissue damage" was adopted by 42% of the elderly and the belief that "Pain is a sign of disease" was adopted by 51%. According to this result, it can be accepted that individuals living in nursing homes perceive pain as a disease.

In geriatric patient group, during evaluation of pain severity, pain belief also should be evaluated due to the interaction between them (17). The presence of negative correlation between pain severity and pain behaviour should be kept in mind during evaluation of geriatric patient.

The risk of depression has an important place among mental problems experienced in old age. In some of the studies that have been carried out in our country since 1991, depression prevalence among the elderly living in nursing homes varied between 6% and 50% (18). Demir et al. reported that depression prevalence among the elderly in nursing home was 68.9% (19). In this study risk of depression was observed among more than half of the elderly (51.4%).

The risk of depression and pain influence physical functions of the elderly negatively. In this study, it was observed that neurological disease and chronic pain are factors that influence risk of depression. In a study by Gümüş, acute or chronic pain influences depression (2). In the present study, it was determined that the risk of depression is higher among the elderly who have chronic pain.

In the light of this study we can say that pain is frequently seen as a common symptom in elderly residents living in nursing homes. It was revealed that pain severity has strong correlation between pain beliefs. In order to improve their quality of life, during pain management we have take patient's pain belief into consideration.

REFERENCES

1. Zanocchi M, Maero B, Nicola E, et al. Chronic pain in a sample of nursing home residents: Prevalence, characteristics, influence on quality of life. Arch Gerontol Geriatr 2008;47(1):121-8. (PMID:18006088).

2. Gümüş BA, Keskin G, Orgun F. Pain and living activities in elderly at a nursing home: An investigation in terms of depressıon, anxiety and somatization. Turkish Journal of Geriatrics 2012;15(3):299-305. (in Turkish).

3. Yesavage JA, Brink TL, Rose TL, et al. Development and validation of a geriatric depression screening scale: A preliminary report. J Psychiatr Res 1983;17(1):37-49. (PMID:7183759).

4. Ertan T, Eker E, Şar V. Reliability and validity of the Geriatric depression scale in Turkish elderly population. Archives of Neuropsychiatry 1997;34(2):62-71.

5. Edvards LC, Pearce CA, Turner-Stokers L, Jones A. The pain beliefs questionnaire: An Investigastion of beliefs in the causes and consequences of pain. Pain 1992;51(3):267-72. (PMID:1491853).

6. Sertel Berk H Ö, Bahadır G. The experience of chronic pain and pain beliefs. The Journal of The Turkish Society of Algology 2007;19 (4):5-16. (PMID:18159574).

7. Cavalieri TA. Management of pain in older adults. J Am Osteopath Assoc 2005;105 (3 Suppl 1):12-7. (PMID:18154193).

8. Van Herk R, Boerlage AA, Van Dijk M, Baar FP, Tibboel D, de Wit R. Pain management in Dutch nursing homes leaves much to be desired. Pain Manag Nurs 2009;10(1):32-9. (PMID:19264281).

9. Cadogan MP, Edelen MO, Lorenz KA, et al. The relationship of reported pain severity to perceived effect on function of nursing home residents. J Gerontol A Biol Sci Med Sci 2008;63(9):969-73. (PMID:18840802).

10. D'Astolfo CJ. Humphreys BK. A record review of reported musculoskeletal pain in an Ontario long term care facility. BMC Geriatrics 2006;6(5):1-7. (PMID:16556306).

11. Takai Y, Yamamoto-Mitani N, Okamoto Y, Koyama K, Honda A. Literature review of pain prevalence among older residents of nursing homes. Pain Manag Nurs 2010;11(4):209-23. (PMID:21095596).

12. Gündüzoğlu ÇN, Karadakovan A. Pain management in elderly people. Journal of Geriatric and Geriatric Neuropsychiatry 2011;2(2-3):41-8.

13. Mimi MY Tse, Suki SK Ho. Pain management for older persons living in nursing homes: A pilot study. Pain Manag Nurs 2013;14(2):10-21. (PMID:23688367).

14. Onar E, Kapucu S. Polypharmacy in the elderly. Journal of Academic Geriatrics 2011;3(1):22-8.

15. Lapene KL, Quilliam BJ, Chow W, Kim MS. Pharmacologic management of non-cancer pain among nursing home residents. J Pain Symptom Manage 2013;45(1):33-42. (PMID:22841409).

16. Monsivais D, McNeill J. Multicultural influences on pain medication attitudes and beliefs in patients with nonmalignant chronic pain syndromes. Pain Manag Nurs 2007;8(2):64-71. (PMID:17544125).

17. Koçoğlu D, Özdemir L. The relation between pain and pain beliefs and sociodemographic-economic characteristics in an adult population. Agri 2011;23(2):64-70. (PMID:21644106). (in Turkish).

18. Tiong WW, Yap P, Huat Koh GC, Phoon Fong N, Luo N. Prevalence and risk factors of depression in the elderly nursing home residents in Singapore. Aging and Mental Health 2013;17(6):724-31. (PMID: 23461826).

19. Demir G, Ünsal A, Gürol AG, Çoban A. Study of prevalence of depression among elders living at nursing home and house. Gümüşhane University Journal of Health Sciences 2013;2(1):1-12. (in Turkish).