Original Article

Evaluation of the Coping Strategies Used by Knee Osteoarthritis Patients for Pain and Their Effect on the Disease-Specific Quality of Life

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Abstract

Background: Analyses of pain coping strategies in patients with osteoarthritis are important for minimizing the impact of symptoms and establishing appropriate disease management.
Objective: The aim of this study is to evaluate the strategies that patients with knee osteoarthritis use to cope with pain and effect of these strategies on disease-specific quality of life.
Methods: The study is a descriptive one. Nonrandom sample included 145 patients with knee osteoarthritis, who presented to the orthopedics outpatient clinic during one year. This study was performed at a training and research hospital in Ankara, Turkey. The institutional consent was obtained for the study. Data collected with the patient information form, pain definition and coping strategies evaluation form, and Arthritis Impact Measurement Scale 2. Collected data were analysed by descriptive and analytical statistics using SPSS 15.0 software.
Results: With increasing severity of pain, quality of life was being affected unfavorably. The mostly experienced problem was within the area of symptom status (pain of arthritis) ($\overline{X}$=7.06±1.94). The average scores of areas of quality of life were more favorable in patients who were using non-pharmacological and alternative strategies compared to patients who were using pharmacological and traditional strategies.
Conclusion: A pain management plan, which includes non-pharmacological and alternative strategies that have favorable effects on quality of life areas, should be prepared and implemented with an organized education and counseling.

Key words: Osteoarthritis; pain; coping strategy; quality of life; nursing

Introduction

Osteoarthritis (OA) is the most common joint disorder. It is estimated that, by 2030, close to 70 million persons aged 65 and older will be at risk for OA (Regier & Parmelee, 2015). OA, is often associated with pain, functional impairment, activity limitations and decreased independence in activities of daily living, depressed mood, and a reduction in quality of life. Pain is frequently identified as the most distressing symptom of OA (Tanimura et al., 2011; Regier & Parmelee, 2015). The primary aim in OA treatment is to control the pain and improve the quality of

life (Rubin, 2005; Seomun et al., 2006). Studies emphasize that pain control is effective in improving quality of life (Algıer et al., 2005; Jakobsson and Hallberg, 2006). The combination of pharmacological and non-pharmacological strategies is reported to provide the best pain management in the treatment programs (Rubin, 2005). Non-pharmacological strategies enable individuals to play an active role in coping with pain and to be in control. They also decrease the amount of analgesic used, and therefore, drug side effects and associated financial burden (Seomun et al., 2006; Perrot et al., 2008; Tsai et al., 2008). It was emphasized that ensuring individuals stayed active by being permitted to select a strategy by themselves was important both for decreasing symptoms and making them happy with the procedure (Benyon et al., 2010).

The development of effective coping skills may be a crucial determinant of well-being in older adults with this disease. While the existing literature on coping specifically with OA in the older population is relatively small (Regier & Parmelee, 2015). There have not been any studies on OA patients use to cope with pain and effects of these strategies on disease-specific quality of life in Turkey. This study focuses on OA of the knee, as this is the single most common site of OA; additionally, the fact that the knee is a weight-bearing joint bears strong implications for functional activities (Regier & Parmelee, 2015). Therefore, the purpose of this study was to evaluate the effect of the strategies knee OA patients use to cope with pain on the disease-specific quality of life. The result of this study will underline pain management; help develop effective interventions for knee OA patients to cope with pain.

Methods

Setting and samples

The study population comprised a total of 145 patients with knee OA and data were collected for one year. This study was conducted at the orthopedics outpatient units of a training and research hospital in Ankara, Turkey. Patients fulfilled the classification criteria of American Rheumatism Association for OA of the knee. Inclusion criteria were; being diagnosed with knee OA, having experienced knee pain in the past 6 months or more, aged 40 years or older, absence of a surgical intervention in the past month, did not have any other problems that could affect the musculoskeletal system, absence of mental confusion or any other psychiatric condition and voluntary consent of participation.

Instruments

The questionnaire used to collect data consisted of three forms.

Patient Information Form: This 23-question form, developed by the investigator following a literature search, queries the sociodemographic characteristics, health status and health behavior of the individuals.

Pain Definition and Pain Coping Strategies Evaluation Form: The form consists of two sections: (1) The pain definition section is developed by McCafery and Boobe and translated into Turkish by Algology Department of Istanbul University School of Medicine. In this form, the severity (in a numerical scale), the duration, the quality, accompanying feelings and symptoms, decreasing and increasing factors of the pain are questioned.(2) Pain coping strategies section includes questions is developed by the investigators according to opinions of the experts (orthopedist, clinical specialist nurse, educator nurse) and literature search. In this section, the coping strategies are interrogated. These strategies are classified as pharmacological methods (analgesic treatment, intraarticular medical treatment, topical medical treatment), non-pharmacological methods (physical therapy, exercise, weight control, ancillary devices, resting, raising the leg with pain, skin stimulation techniques, cognitive-behavioural methods), alternative medical methods (acupuncture, ayurveda and others)

and traditional methods (herbal medicine, praying, worship).

Arthritis Impact Measurement Scale 2 (AIMS2): The AIMS2 was developed by Meenan et al. (Meenan et al., 1992). A Turkish translation and validity and reliability studies were carried out by Atamaz et al. (Atamaz et al., 2005). The scale is composed of 78 questions and 5 quality of life aspects in 12 subscales; physical status (motion level, walking and bending, hand and finger functions, arm functions, self care, housework), mood (anxiety level, emotional status), symptoms/signs status (arthritis pain), social interaction (social activity, family support) and role function (employment status). These subscales evaluate the associated quality of life within a range of 0-10 points with 0 point indicating good and 10 points poor health status (Atamaz, Hepguler & Oncu, 2005).

Ethical considerations

Informed written consent to participate in the study was obtained from the participants. The study was approved by the Ethics Committee of the Gulhane Military Medical Academy Hospital, Turkey.

Data analysis

The Statistical Package of Social Sciences version 15.0 package program (SPSS, Inc., Chicago, IL, USA) was used for the evaluation of the data. Descriptive statistics: the numerical variables were expressed as numbers and percentages (%), and the quantitative variables were expressed as mean (standard deviation), median and minimum–maximum (min–max) value. Normality of continuous variables were assessed graphically with Shapiro-Wilk analysis.

For dual comparison of parametric variables, Student's t test, and of nonparametric continuous variables Mann-Whitney U test was used. For comparison of three or more variables, one-way analysis of variance (ANOVA) for parametric variables and Kruskal-Wallis test for nonparametric variables. In comparison of categorical variables, cross tables and chi square test is used. Relation between parameters was tested by analysis of correlation. A p value of <0.05 was regarded as statistically significant.

Results

In the study sample of 145 patients with knee OA, most were female (80%), mean age of 59.14±8.55 years, primary school graduate (47.6%) and a housewife (62.8%). Disease-specific characteristics, pain status and coping characteristics of the patients. Patients' average duration of disease was 7.02±5.38 (0-27) years.

The average duration of pain was 7.02±5.38 years and the pain was accompanied by decreased physical activity, lack of sleep and decreased social activity, in addition to feelings of anger and agitation. Pain was increased by fatigue in 41.7% and movement in 33.2% of the patients and decreased by analgesics in 40.0% and rest in 28.9%.

The pharmacological strategies were the most common method used to cope with pain (37.5%), and analgesic usage was the most preferred (54.0%) pharmacological strategy. Rest, a non-pharmacological strategy, was preferred by 40.3% of the patients. Most of the patients stated that the strategies of coping provided partial relief and were used when pain was present.

There was a statistically significant relation between the age and educational level of the individuals and the pain severity (χ^2=34.468; $p<0.001$, χ^2=25.469; $p=0.002$). It was observed that the pain severity increased with increasing age while it decreased with increasing educational level.

We observed that disease duration had an effect on pain severity and that pain severity increased with increasing disease duration ($r=0.317$; $p<0.001$). Educational status (χ^2=23.542; $p<0.001$), occupation (χ^2=21.365; $p=0.011$) and employment status

(χ^2=17.407; p=0.001) influenced the strategy used to cope.

The percentage of the patients with mild pain that used non-pharmacological strategies was 66.7% while increased pain severity led to an increase in the use of both pharmacological strategies together with non-pharmacological strategies.

The disease-specific quality of life of the patients

The walking-bending ($\overline{X}$=07.91±1.75), health status perception ($\overline{X}$ =7.73±2.40) and pain ($\overline{X}$ =7.06±1.95) subscale mean scores were high in the knee osteoarthritis patients. The most problematic quality of life areas were symptom status ($\overline{X}$ = 7.06±1.94) and mood ($\overline{X}$ =4.91±1.55) while the physical function area was least effected ($\overline{X}$ =4.12±1.93) (Table 1).

The 40-55 years age group was doing best regarding quality of life related to physical function. There was a significant difference between the 40-55 years age group and the 66+ age group (z=3.769; p<0.001) when the age groups creating a difference regarding physical function were evaluated. Increased age led to a more negative symptom status (arthritis pain) quality of life area.

The physical functions (t=4.0; p<0.001), mood (t=7.0; p<0.001), symptom status (t=3.3; p<0.001) and social function mean scores (t=4.9; p<0.001) were higher in the women than the men and the difference was statistically significant (Table 2).

Educational status influenced the physical function (F=12.7; p<0.001), mood (F=7.7; p<0.001), symptom status (F=11.3; p<0.001) and social function (F=6.6; p<0.001) areas and the difference was statistically significant. Low educational status was found to have a negative effect on the quality of life (Table 2).

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Physical function, mood and social function area average scores and especially symptom status were directly correlated with an increase in body mass index and these areas were negatively affected.

There was a statistically significant relation between disease duration and physical function (r=0.550, p<0.001), mood (r=0.201, p<0.05), symptom status (r=0.520, p<0.001) and social function (r=0.248, p<0.05) areas with the score increasing as the disease duration increased, with more negative effects on quality of life (Table 3).

We found a strong, positive and statistically significant relation between the pain severity and the scores from the physical function, mood, symptom status and social function areas of the quality of life (p<0.001) (Table 4). The average score from the quality of life areas increased with increasing pain severity with the quality of life areas being negatively affected.

We found that the quality of life mean scores were higher and the quality of life worse in patients using pharmacological methods and traditional applications compared to patients using non-pharmacological or alternative treatments where the quality of life mean scores were lower and the quality of life was better (Table 5).

Currently perceived health status, their expectation in future and the health area in which they mostly wanted improvement

The health status was perceived as unfavorable by 46.9% while 50.3% felt that their health problems were all due to OA and 66.9% believed that OA would become an important problem in the next 10 years.

Patients would most like an improvement in pain (32.2%), mobility (25.3%) and walking-bending (24.5%) as the health-related areas.

Table 1. Distribution of Mean Quality of Life Areas Scores (n=145)

Quality of Life Areas	$\overline{X}$ ±SD	Min-Max
Physical function	4.12±1.93	0.67-8.23
Mood	4.91±1.55	1.50-8.00
Symptom status	7.06±1.94	3.50-10.0
Social function	4.45±1.75	0.00-8.63
Role function	4.68±0.67	3.75-5.63

*a low score indicates good health status and a high score unfavorable health status

Table 2. Distribution of Mean Quality of Life Areas Scores of Patients According to the Socio-demographic Characteristics (n=145)

		QUALITY OF LIFE AREAS				
Socio-demographic Characteristics		**Physical function**	**Mood**	**Symptom status**	**Social function**	**Role function***
Gender	n	$\overline{X}$ ±SD	$\overline{X}$ ±SD	$\overline{X}$ ±SD	$\overline{X}$ ±SD	$\overline{X}$ ±SD
Female	116	4.43±1.86	5.31±1.37	7.33±1.88	4.79±1.59	5.00±0.00
Male	29	2.90±1.75	3.34±1.21	6.01±1.87	3.11±1.73	4.65±0.70
t		4.0	7.0	3.3	4.9	0.4
p		**<0.001**	**<0.001**	**<0.001**	**<0.001**	>0.05
Educational status						
Illitarete	18	5.46±1.48	5.75±1.38	8.41±1.62	5.10±1.60	-
Primary school	69	4.55±1.79	5.25±1.29	7.39±1.92	4.89±1.56	5.00±0.00
Secondary school	40	3.60±1.86	4.41±1.77	6.72±1.69	3.93±1.75	4.84±0.78
High school	18	2.31±1.39	3.88±1.33	5.22±1.36	3.31±1.84	4.50±0.68
F		12.7	7.7	11.3	6.6	0.3
p		**<0.001**	**<0.001**	**<0.001**	**<0.001**	>0.05

*n=10 **a low score indicates good health status and a high score unfavorable health status

Table 3. The Relation between Disease Duration and Quality of Life Areas (n=145)

		Quality of Life Areas				
		Physical function	**Mood**	**Symptom status**	**Social function**	**Role function***
Disease duration (years)	**n**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**
0-5	70	2.99±1.54	4.45±1.48	6.05±1.85	3.93±1.99	-
6-10	50	4.81±1.66	5.40±1.54	7.70±1.49	4.88±1.41	-
11+	25	5.89±1.40	5.24±1.45	8.66±1.33	5.06±1.15	-
F		38.7	6.5	28.4	6.6	-
p		**<0.001**	**<0.05**	**<0.001**	<0.05	-
Disease duration and correlation		r=0.550 **p<0.001**	r=0.201 **p<0.05**	r=0.520 **p<0.001**	r=0.248 **p<0.05**	r=-0.427 p>0.05

*n=10 **a low score indicates good health status and a high score unfavorable health status

Table 4. The Relation between Pain Severity and Quality of Life Areas (n=145)

	Quality of Life Areas				
	Physical function	**Mood**	**Symptom status**	**Social function**	**Role function**
Pain severity	r=0.660 **p<0.001**	r=0.464 **p<0.001**	r=0.676 **p<0.001**	r=0.434 **p<0.001**	r=0.215 **p>0.05**

Table 5. Distribution of Mean Quality of Life Areas Scores of Patients According to the Methods of Coping with Pain (n=145)

		Quality of Life Areas				
Methods of Coping With Pain		**Physical function**	**Mood**	**Symptom status**	**Social function**	**Role function***
Pharmacological method	**n**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**	$\overline{X}$ **±SD**
Not using	5	1.92±1.06	3.90±1.75	5.20±1.09	3.78±2.71	-
Using	140	4.20±1.91	4.95±1.54	7.13±1.93	4.48±1.72	4.68±0.67
t		2.6	1.4	2.2	0.8	-
p		**<0.05**	>0.05	**<0.05**	>0.05	-
Non-pharmacological method						
Not using	18	4.57±1.53	4.81±0.97	7.44±1.54	4.62±0.87	-
Using	127	4.06±1.98	4.93 ±1.62	7.01±1.99	4.43±1.84	4.68±0.67
t		1.0	0.2	0.8	0.4	-
p		>0.05	>0.05	>0.05	>0.05	-
Alternative medicine						
Not using	135	4.25±1.89	5.00±1.54	7.17±1.92	4.58±1.67	4.89±1.61
Using	10	2.41±1.71	3.77±1.31	5.70±1.71	2.70±1.95	4.37±0.72
t		2.9	2.4	2.3	3.3	1.2
p		**<0.05**	**<0.05**	**<0.05**	**=0.001**	>0.05
Traditional method						
Not using	59	3.12±1.69	4.48±1.39	6.11±1.74	3.89±1.72	4.60±0.74
Using	86	4.80±1.79	5.21±1.60	7.72±1.81	4.84±1.67	5.00±0.00
t		5.6	2.8	5.3	3.3	0.7
p		**<0.001**	**<0.05**	**<0.001**	**=0.001**	>0.05

*n=10 **a low score indicates good health status and a high score unfavorable health status

Discussion

Pain limits functions and negatively affects the quality of life in knee OA patients. The disorder-related effects of knee OA, and especially the pain, increase in individuals with advancing age (Jakobsson & Hallberg, 2006). We found a significant relation between age and pain severity, with the severity increasing and the physical function and symptom status areas of the quality of life more negatively affected with increasing age. We also found that the quality of life results were better in males. These finding agree in part with a previous report that women have lower mean quality of life

scores than men with a negative effect on the quality of life (Algıer et al., 2005).

We found that increasing pain led to decreased physical activity, insomnia and decreased social activity complaints and accompanying emotions such as agitation and anger. Reports state that negative mood has a negative effect on the coping strategies or individuals and therefore their perception of pain severity directing them towards passive coping strategies such as looking for medical help, seeking help from others or feeling helpless, therefore increasing the perceived pain severity (Keefe et al., 1990; Ataoglu et al., 1998; Seomun et al., 2006; Tanimura et al., 2011).

In terms of pain coping strategies, our results indicate that the patients used non-pharmacological strategies at similar rates to pharmacological strategies to cope with pain. It is reported that better results are obtained when the drugs used for knee OA treatment are combined with disease-specific non-pharmacological strategies such as exercise and weight loss (Rubin, 2005). It is thought that pharmacological strategies, with the side effects they may cause, can lead to a more negative effect on the quality of life, which has already been negatively affected in patients with knee OA due to the disease and its signs.

Studies report that ineffective individual coping leads to a lack of effective management of disease by the individual with a negative effect on the quality of life. It also shows that individuals who develop active coping strategies for pain can lead a more functional lifestyle (Keefe et al., 1990; Burke & Flatherty, 1993; Seomun et al., 2006). Ataoglu et al. (Ataoglu et al., 1998) reported that patients with OA mostly use active coping strategies to cope with pain. This was explained by the patients observing the prominent OA effects and objective pathology and assuming pain-decreasing behavior to decrease it. The reason patients use active coping strategies often has been stated as the resultant increased self-confidence and being less psychologically affected by this method. Perrot et al. (Perrot et al., 2008) have reported that there is tendency to use passive methods, such as retreating and resting, in coping with pain in OA.

We found that patients with mild pain used non-pharmacological strategies while the rate of pharmacological strategies use in addition to non-pharmacological strategies increased with increasing pain severity. Tsai et al. (Tsai et al., 2008) reported that most of the patients used pharmacological coping strategies about half of the time and non-pharmacological strategies about one-quarter of the time. The lack of knowledge regarding non-pharmacological strategies of knee OA patients and their inability to use these effectively indicates that non-pharmacological strategies are inadequate in pain management and that patients therefore try pharmacological strategies (Atamaz, Hepguler & Oncu, 2006).

It is emphasized that education ensures that patients have information regarding their disorder and its treatment and therefore increases their control of the disease and also has a positive effect on pain and quality of life (Algıer et al., 2005; Seomun et al., 2006). Atamaz et al. (Atamaz, Hepguler & Oncu, 2006) report that OA patients with lower educational status do not use active coping strategies or use them less often and develop more complications.

It is reported that women generally use passive coping strategies and choose pharmacological strategies while men use active coping strategies and use non-pharmacological strategies (Burke & Flatherty, 1993; Ataoglu et al, 1998). Most of our patients were women and mostly used pharmacological strategies indicating that these reasons may also be valid for our study group.

The quality of life areas that were most negatively affected were walking-bending, perception of health status and pain. Meenan et al. (Meenan et al., 1992) have similarly reported that the most problematic area was

pain, followed by walking and bending. Tsai et al. (Tsai et al., 2008) have reported that most patients with pain have coped with their pain by stopping activity. These findings indicate the importance of interventions to decrease pain in individuals with knee OA.

In our study, almost half of the patients perceived their current health status as unfavorable and stated that they felt their health would get worse in the next ten years. Other articles mention that "the perceived feeling of control over pain" among the factors that affect coping. It is emphasized that the perception of hopelessness regarding this control has a negative effect on coping (Seomun et al., 2006).

Conclusion

These findings indicate that the pharmacological strategies were the most common method used to cope with pain, and increased severity of pain was associated with the use of pharmacological strategies. The average score from the quality of life areas increased with increasing pain severity with the quality of life areas being negatively affected. The average scores of areas of quality of life were more favorable in patients who were using non-pharmacological and alternative strategies compared to patients who were using pharmacological and traditional strategies. The studies that investigated the other factors of using pharmacological strategies should be carried on. A treatment plan, which includes non-pharmacological and alternative strategies as well as pharmacological and traditional strategies, should be prepared and carried on with counseling. In order to enhance the adherence to the plan, individual characteristics, learning features and preferences should be taken into account.

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