RESEARCH

RELATION OF FEAR-AVOIDANCE BEHAVIOURS, OBESITY, DEPRESSION, AND DISABILITY IN GERIATRIC WOMEN WITH CHRONIC LOW BACK PAIN

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Abstract

Introduction: Chronic low back pain is a common, disabling and challenging disorder in geriatric women. Chronic low back pain associated disability is multi-factorial. This study aimed to evaluate the relation of fear-avoidance beliefs, obesity, depression and disability in geriatric women with chronic low back pain.

Materials and Method: In this study, 66 geriatric women with chronic low back pain attending to Physical Medicine and Rehabilitation Clinic were included. Demographic and clinical data including body mass index of each patient were noted. Fear-avoidance beliefs, pain intensity, presence of depression, disability due to low back pain were assessed using the Fear-Avoidance Beliefs Questionnaire, Visual Analogue Scale, Geriatric Depression Scale, Rolland Morris Disability Questionnaire, respectively.

Results: In the current study, the majority of patients (84.8%) were found to have fear-avoidance beliefs. Most of the patients participating the study were overweight or obese (95.5%). 22.7% of patients were found to have moderate or definite depression. Fear- avoidance beliefs were associated with higher body mass index, depression, higher disability and vice versa, (Spearman's rho=0.255, p=0.039; Spearman's rho=0.386, p=0.001; Spearman's rho= 0.448, p<0.001, respectively).

Conclusion: Fear-avoidance beliefs, obesity and depression are common in geriatric women with chronic low back pain and are associated with higher disability. To break the vicious circle between these conditions, all these factors should be considered in the evaluation and management of geriatric women with chronic low back pain.

Keywords: Geriatrics; Low Back Pain; Chronic Pain; Women; Obesity; Depression.

INTRODUCTION

Chronic low back pain (CLBP) is one of the most common, disabling, and challenging chronic pain disorders in the geriatric population. Those who develop chronic pain constitute the greatest suffering and expenditure of health care resources (1). The prevalence of LBP in geriatric women ranges from 35% to 82%. CLBP is more common among women than men in the geriatric population (2). This may be related to the fact that women live with more comorbidities, experience the chronicity of clinical conditions, and live harder lives especially in some regions of the world. A study from Turkey reported that sociodemographic characteristics, social and psychological factors may affect quality of life in women with chronic musculoskeletal pain (3).

Economic and social burden of women is high in Turkey. Most women spend their day-time doing housework all through their life. Also, they have harder family roles, and majority of women are under financial strain (4). In a multi-center geriatric study reported from Turkey, frailty was more common among women than men (5). For all these reasons, with advancing age, geriatric women become more prone to chronic musculoskeletal problems like CLBP. Management of CLBP should be comprehensive, especially in geriatric women taking into account many factors like biological, psychological, cognitive, and social influences.

People disabled by low back pain may have disproportionately strong beliefs about the back pain and avoid activities they "fear" will lead to additional pain and injury. These disadvantageous concerns are termed as "fear-avoidance beliefs(FABs)" (6). FABs and resultant disability have direct consequences for patients like physical inactivity, depression, reduced activities of daily living, reduced work ability, sexual dysfunction, dependence on medications, and excessive utilization of medical services (7).

Having a body mass index (BMI) categorised as overweight or obese is a modifiable risk factor for low back pain. This association may be due to increased mechanical load on the spine, increased risk of injuries, or links with atherosclerosis, sciatic pain, inflammation, or insulin resistance (8). Additionally, evidence supports a biopsychosocial interaction of emotional disorders such as depression and catastrophisation with obesity and low back pain (9).

Depression and CLBP are common in older adults treated, with point prevalence rates approaching 12% for both conditions. These conditions are frequently co-morbid in late life, sharing risk factors, a linked biology, and overlapping psychological signatures (10). Furthermore, CLBP and depression, especially when comorbid, increase the risk of other medical conditions and negative outcomes, such as falls and drug interactions (11).

The effect of FABs, obesity, and depression on CLBP has been studied seperately before in different patient groups. However there is lack of evidence about interaction of all these factors in geriatric women with CLBP. This study aims to evaluate the relation of FABs, obesity, depression and disability in geriatric women with CLBP.

MATERİAL AND METHODS

Community-dwelling geriatric women (65 years and more), with low back pain lasting more than 3 months of duration were recruited from consecutive patients attending to the Physical Medicine and Rehabilitation Clinic. All participants were informed about the study and provided written informed consent prior to enrolment. The study was conducted with face to face interview method. Exclusion criteria were: (1) presence of a serious pathology (e.g., infection, malignancy, cauda equina syndrome) ; (2) a history of spinal surgery; (3) hemodynamic instability (e.g., stage 3-4 heart failure, uncontrollable hy-

pertension, continuous need for oxygen); (4) presence of prominent pain in other parts of the body; (5) presence of a neurological disease like stroke, Alzheimer disease, multiple sclerosis; (6) presence of prominent visual and hearing deficits; (7) unable to cooperate.

General physical examinations of all patients were made, height and weight of all patients were measured. Demographic and clinical characteristics, including etiology and duration of pain, frequency of analgesic use, BMI, were noted. BMI remains the most widely used tool for measuring the prevalence of obesity in research studies. BMI is specified as weight in kilograms divided by height in meters squared. BMI under 18.5 kg/m^2 was accepted as underweight, BMI greater than or equal to 18.5 to 24.9 kg/m^2 was accepted as normal weight, BMI greater than or equal to 25 to 29.9 kg/m^2 was accepted as overweight, BMI greater than or equal to 30 kg/m^2 was accepted as obesity. BMI greater than or equal to 40 kg/m^2 was accepted as morbid obesity (12).

Pain intensity was evaluated with the 10 cm Visual Anologue Scale (VAS) (0= no pain; 10= unbearable pain). Study participants were asked to mark their general pain intensity on the scale. The fear-avoidance beliefs were evaluated with the validated Turkish Fear-Avoidance Beliefs Questionnaire (FABQ) (13). FABQ is commonly used to explore fear avoidant beliefs and behaviours. The FABQ measures an individual's beliefs regarding the impact of physical activity and work on his or her low back pain. The FABQ comprises 2 subscales: physical activity and work (14). We used only the physical activity section of FABQ because none of the subjects in our study were employed. According to the cut-off value defined in previous literature the physical activities score was classified as low fear (0-14) or high fear (15 points or more) (15).

Presence of depression was determined by the Turkish version of the Geriatric Depression Scale (GDS) (16, 17). A GDS score from 0 to 10 points was accepted as no depression, 11-13 points as moderate depression, and 14 points and more as definite depression. These cut-off points were previously determined and highly used in previous studies (18).

The Turkish version of the Roland Morris Disability Questionnaire was to evaluate disability. The Roland Morris Disability Index comprises 24 articles. Activity level, daily living activities, eating, and sleeping are questioned by means of this index. It does not measure psychosocial function. The total score is calculated by scoring in the manner that yes is 1 and no is 0 (19, 20).

Statistical Analysis

Firstly all data were classified as continuous, and categoric variables. Percentages of categorical data were found. Distribution characteristics of continuous variables were determined [(mean, median, standard deviation, standard error, and 25%–75% interquartile range (IQR)]. Differences between groups were compared with the Mann Whitney U test. Fisher's exact test was used for comparing the frequency of categoric variables. Correlation analyses between continuous variables were made with Spearman's test. P-value < 0.05 was considered statistically significant. Statistical analyses were performed using SPSS version 25.0 software (SPSS Inc., Chicago, IL, USA).

This study was conducted in conformity with the Declaration of Helsinki principles and ethical approval was taken from the local committee (Health Science University, Diskapi Yildirim Beyazit Education and Research Hospital, Number:25/06, 20.08.2015).

RESULTS

A total of 66 geriatric women with chronic low back pain were enrolled in the study. Median age of patients was 70 (67-73)[median (25–75% IQR)]. The

majority of patients participating in the study were overweight or obese. Only 4.5% of patients had normal weight. All patients were diagnosed with lumbal spondylosis; 7 patients (10.6%) had concomitant pathologies (spondylolisthesis, scoliosis, disc herniation).The median duration of chronic low back pain was 10 years (3-15)[median (25–75% IQR)]. Patients with chronic low back pain had a mean VAS score of 7 (6-7)[median (25–75% IQR)]. Nearly all of the patients (97%) used analgesics for controlling pain, and more than a third of the patients (36.4%) used 3 or more analgesic drugs per week. Over 80% of the patients had prominent fear-avoidance behaviours. 22.7% of patients were found to have moderate or definite depression. Demographic and clinical characteristics of patients are shown in Table 1.

There were no differences between participants with and without fear-avoidance behaviours in terms of age, BMI, pain intensity, presence of moderate or definite depression. The fear-avoidant group had longer duration of pain and had higher disability scores; 10 years(3-15)[median (25–75% IQR)] vs 3.25 years (0.5-10)[median (25–75% IQR)] and 19 (16-20) [median (25–75% IQR)] vs 11.5 (5-19)[median (25–75% IQR)] points from the Roland Morris Disability Questionnaire ($p = 0.028$), ($p = 0.008$) respectively. Table 2 shows a comparison of participants with and without fear-avoidance behaviours.

When the correlation analyses were made; more severe pain was correlated with higher disability scores (Spearman's rho=0.263), (p=0.033); higher scores from fear-avoidance beliefs questionnaire were correlated with higher disability scores (Spearman's rho= 0.448), ($p<0.001$). Patients with higher depression scores tended to have higher disability scores (Spearman's rho=0.392), (p=0.001) and higher fear-avoidance beliefs scores (Spearman's rho=0.386), (p=0.001). Also, higher BMI was found to be correlated both with higher disability scores (Spearman's rho= 0.265), (p=0.031) and higher fear-avoidance beliefs scores (Spearman's rho=0.255), (p=0.039). The results of all these analyses are shown in Table 3.

Relation of fear-avoidance beliefs scores and Roland Morris disability scores are also shown in Figure 1.

DISCUSSION

In the current study, most of geriatric women with CLBP were found to have fear-avoidance beliefs. Patients with a longer duration of CLBP were more fear avoidant. Fear-avoidance behaviours, depression, higher BMI, more severe pain were related to higher disability in this study population.

The fear-avoidance belief model has been proposed to explain the development of chronic low back pain. People are motivated to avoid activities in which they have experienced acute episodes of pain to reduce the likelihood of re-experiencing pain or causing further physical damage. This is an adaptive behavioral strategy for dealing with acute situations involving acute pain, but it can become maladaptive when dealing with chronic pain (6). Reduction of physical capacities and activities resulting from avoidance behaviours may result in disuse syndrome. High prevalence of fear-avoidant geriatric women (80%) in our study supports these findings. In our study, fear-avoidant geriatric women were found to have a longer duration of low back pain and were more disabled than non fear- avoidant geriatric women. These findings were in concordance with previous literature (6,7). Also, the fear-avoidant group in our study had a longer duration of low back pain which further decreases the quality of life of these geriatric women patients. These patients need to use analgesic drugs to control pain. In our study, 97% of the geriatric women reported using analgesic drugs to control chronic low back pain. Advancing age is a risk factor for adverse effects of these drugs. Barriers to pharmacologically managing chronic pain specific to ger-

Table 1: Demographic and clinical characteristics of older women with chronic low back pain

Age, (Years)*	70(67-73)
Height, (cm)*	156(152-160)
Weight, (kg)*	72(66-84)
BMI, (kg/m^2)*	30(26.4-34.2)
Classification of patients according to BMI	
Underweight, n,(%)	0(0)
Normal, n,(%)	3(4.5)
Over-weight, n,(%)	29(43.9)
Obese, n,(%)	30(45.5)
Morbid obese, n,(%)	4(6.1)
Marrital Status	
Married n,(%)	28(42.4)
Single n,(%)	38(57.6)
Education level	
Literate n,(%)	25(37.9)
Primary school n,(%)	35(53)
High school n,(%)	3(4.5)
University n,(%)	3(4.5)
Living style	
With husband n,(%)	24(36.4)
With family members n,(%)	24(36.4)
Alone n,(%)	18(27.3)
Diagnosis	
Lumbal stenosis n,(%)	59(89.4)
Lumbal stenosis and concomittant pathologies n,(%)	7(10.6)
Duration of pain, (Years)*	10(3-15)
VAS*	7(6-7)
Analgesic use per week*	2(1-7)
Frequency of analgesic use per week	
No analgesic use, n(%)	2(3)
Less than 1 per week, n(%)	14(21.2)
1-2 per week, n(%)	26(39.4)
3 and more than per week, n(%)	24(36.4)
Fear avoidance beliefs total score*	25(20-27)
Presence of Fear Avoidance Beliefs	
Fear avoidance beliefs absent, n(%)	10(15.2)
Fear avoidance beliefs present, n(%)	56(84.8)
Geriatric depression scale scores*	9(7-10)
Presence of depression	
Depression absent n,(%)	51(77.3)
Presence of probable and definite depression n,(%)	15(22.7)
Roland-Morris disability scores*	19(15-20)

BMI: Body Mass Index, VAS: Visual Analog Scale. * Median (25–75% interquartile range).

Table 2: Comparison of participants with and without fear avoidance behaviorsw

	Non-fear avoidant (n=10)	Fear avoidant (n=56)	p
Age, (Years)*	71.5(69-78)	70(67-73)	0.199
BMI, (kg/m^2)*	30(25.3-30)	29.8(26.55-34.3)	0.283
Classification of patients according to BMI			0.879
Underweight n,(%)	0(0)	0(0)	
Normal n,(%)	1(10)	2(3.6)	
Over-weight n,(%)	3(30)	26(46.4)	
Obese n,(%)	6(60)	24(42.9)	
Morbid obese n,(%)	0(0)	4(7.1)	
Marrital Status			0.302
Married n,(%)	6(60)	22(39.3)	
Single n,(%)	4(40)	34(60.7)	
Education level			0.264
Literate n,(%)	3(30)	22(39.3)	
Primary school n,(%)	5(50)	30(53.6)	
High school n,(%)	1(10)	2(3.6)	
University n,(%)	1(10)	2(3.6)	
Living style			0.639
With husband n,(%)	4(40)	20(35.7)	
With family members n,(%)	4(40)	20(35.7)	
Alone n,(%)	2(20)	16(28.6)	
Diagnosis			0.065
Lumbal stenosis n,(%)	7(70)	52(92.9)	
Lumbal stenosis and concomittant pathologies n,(%)	3(30)	4(7.1)	
Duration of pain, (Years)*	3.25(0.5-10)	10(3-15)	**0.028**
VAS*	7(6-7)	7(6-8)	0.912
Analgesic use per week*	1(1-7)	2(0.85-7)	0.532
Frequency of analgesic use per week			0.709
No analgesic use, n(%)	1(10)	1(1.8)	
Less than 1 per week, n(%)	1(10)	13(23.2)	
1-2 per week, n(%)	5(50)	21(37.5)	
3 and more than per week, n(%)	3(30)	21(37.5)	
Geriatric depression scale scores*	4.5(2-10)	9(7-10)	0.114
Presence of depression			1.000
Depression absent n,(%)	10(100)	54(96.4)	
Presence of probable and definite depression n,(%)	0(0)	2(3.6)	
Roland-Morris disability scores *	11.5(5-19)	19(16-20)	**0.008**

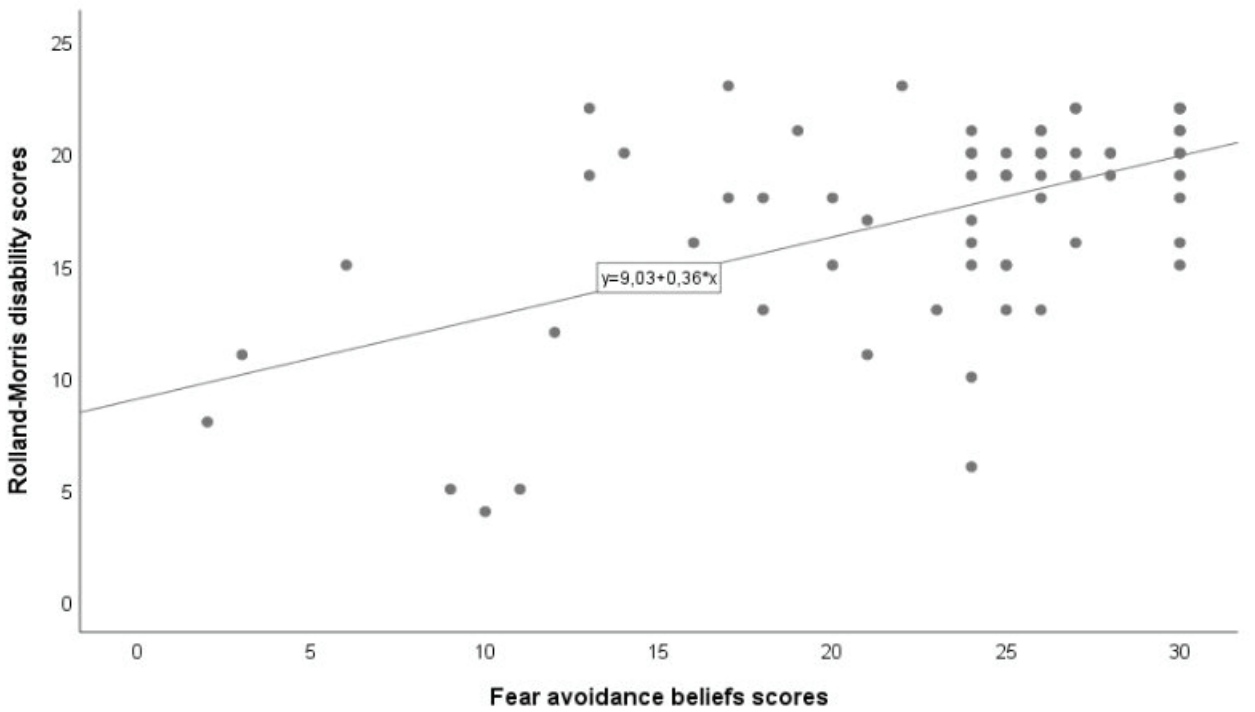
BMI: Body Mass Index, VAS: Visual Analog Scale. * Median (25–75% interquartile range).p<0.05 was considered statistically significant.

Table 3. Correlation of VAS (Visual Analog Scale) score, Roland Morris disability scores, Fear Avoidance Beliefs scores, Geriatric Depression Scale scores, Age and BMI (Body Mass Index)

		VAS	Roland Morris Disability Score	Fear Avoidance Beliefs Score	Geri atric Dep-ression Scale Score	Age,(Years)
Rolland Morris Disability Score	Spearman's rho	**0.263**				
	p	**0.033**				
Fear Avoidance Beliefs scores	Spearman's rho	0.137	**0.448**			
	p	0.274	**<0.001**			
Geriatric Depression Scale scores	Spearman's rho	0.147	**0.392**	**0.386**		
	p	0.240	**0.001**	**0.001**		
Age, (Years)	Spearman's rho	0.077	0.055	-0.220	-0.097	
	p	0.538	0.663	0.076	0.440	
BMI, (kg/m^2)	Spearman's rho	0.138	**0.265**	**0.255**	0.127	-0.183
	p	0.270	**0.031**	**0.039**	0.310	0.142

p<0.05 was considered statistically significant.

Figure 1. Correlation of Rolland-Morris disability scores and Fear Avoidance Beliefs scores



iatric populations include age-related physiologic changes resulting in altered drug absorption and decreased renal excretion; sensory and cognitive impairments; polypharmacy; and multimorbidity, particularly involving chronic conditions such as cognitive impairment, gait disorders, and kidney, lung, and cardiovascular disease (21). Longer use of analgesics may further increase the risk for adverse effects in this vulnerable population. Careful monitoring of efficacy and toxicity of analgesics is crucial in follow-up, and a multimodal approach is strongly recommended–emphasizing a combination of both pharmacologic and nonpharmacologic treatments to include physical and occupational rehabilitation, as well as cognitive-behavioral and movement-based interventions (22).

For all these reasons, fear-avoidance in geriatric women with chronic low back pain should be carefully screened and specifically treated. Treatment of fear-avoidance has been addressed in only a few studies. A specific exercise regimen can be applied to solve this problem.

In a randomized control study reported from the USA, general conditioning and aerobic exercise groups experienced significantly fewer fear-avoidance beliefs immediately post-intervention and at 6 months than non-exercising groups in geriatric patients with chronic low back pain (6). In another study, physical training, patient education, and workplace or home modification were suggested (7). Future studies are needed to devise new methods to solve of this important and multi-faceted problem.

Obesity is another common problem among geriatric women with spinal pain. It has been shown to be related to chronic low back pain in the geriatric population in large-scale studies (8). In line with previous literature, 95.5% of the patients were overweight or obese in our study. In Turkey, sedentary behavior is more common among females than males. Reluctance from movement may lead to weight gain and vice versa. A recently published study reported from Italy verified that kinesiophobia partially mediated the association between pain intensity and disability in obese patients with chronic low back pain (23). In our study, higher BMI was associated both with higher fear-avoidance beliefs scores and higher disability. We want to emphasize the role of kinesiophobia that should be taken into account, especially in obese geriatric women with chronic low back pain to reduce disability.

Depression is also a challenging disorder and is common in geriatric women (10, 24). However, the relationship between depression and low back pain in this population has not been fully explained.

In our study, nearly a quarter of patients were found to have depression. Higher depressive scores were related to higher fear-avoidance beliefs scores and higher disability. Depressive women may tend to be more kinesiophobic, have prolonged sitting time, and have lower sleep quality, all of which explain our results.

Geriatric women with CLBP should be screened for depression, and treated if depression is present. Effective treatment of depression in geriatric women with CLBP will reduce pain-related activities interference and overall disability. These patients should also be screened for critical psychiatric comorbidities that may worsen CLBP, including alcohol use, anxiety disorders, cognitive impairment, insomnia, and sleep-disordered breathing. Depression comorbid with CLBP should be treated for at least 1 year to avoid recurrence. Behavioral interventions and pharmacotherapy such as SSRIs and SNRIs, chosen based on symptom severity and shared decision making, may improve long-term outcomes. Also, patients should be encouraged to expand their social networks and develop their social support (24).

Strengths

To our knowledge, this is the first study that evaluates the relation of fear-avoidance beliefs, depression and disability in geriatric women with chronic

low back pain. We included geriatric women with chronic low back pain, an under-represented group in back pain research. Patients are selected carefully with strict exclusion criteria to make a homogenous study group. The general view and results of the study may be helpful for health professionals dealing with geriatric women and may shed light for future studies.

Limitations

This study has some limitations. Firstly, the cross-sectional design of the study did not allow the assessment of the temporal relationship among variables. Secondly, self reported data may be subjective. Lastly, the potential for uncontrolled confounding factors may lead to some limitations.

Conclusions

Our study gives important clues for a general approach to geriatric women patients with chronic low back pain. Fear-avoidance behaviours, depression, and obesity, are common problems in this population. Fear-avoidance behaviours are associated with high BMI, depression, higher disability, and vice versa. To break this vicious circle, firstly, every geriatric woman with chronic low back pain should be evaluated for the presence of fear-avoidance behaviours, depression, and obesity.

Then treatment plan should be individualized for each patient. The management plan should include increasing of patient mobility after controlling pain, bringing BMI to optimal levels, preventing and treating depression after appropriate diagnosis was made. Such comprehensive intervention programs are more cost-effective and yield therapeutically better results.

Declaration of Competing Interest

The authors report no actual or potential conflict of interest.

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