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Clinical Correlation Between Back Pain and Osteoarthritis Among Adults: A Cross-Sectional Study

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RESEARCH

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ABSTRACT

Objective

To investigate the clinical correlation between back pain and the role of osteoarthritis in the etiology of this pain

Methods

This research employs a cross-sectional study design to investigate the clinical correlation between back pain and osteoarthritis in adults. Cross-sectional studies provide a snapshot of data at a specific time, making them suitable for assessing the prevalence and potential associations between variables of interest.

Results

The study included 1106 participants. The most frequent age among them was 40-50 years (n= 486, 43.9Per Cent), followed by 18-28 years (n= 340, 30.7Per Cent). The most frequent gender among study participants was female (n= 560, 50.6Per Cent) followed by male (n= 546, 49.4Per Cent). The most frequent marital status among study participants was married (n= 702, 63.5Per Cent), followed by single (n= 353, 31.9Per Cent). The most frequent job among study participants was a government job (n= 480, 43.4Per Cent), followed by a private sector job (n= 177, 16Per Cent). Duration of suffering from back pain among study participants with most of them being 1 to 5 years (n= 505, 45.7Per Cent), followed by nothing (n= 373, 33.7Per Cent), and the least was 23 years and above (n= 13, 1.2Per Cent). Participants were asked about evaluating the impact of back pain on life. For personal care, the most frequent was (currently, I do not feel any pain) (n= 514, 46.5Per Cent). The severity of pain, the most frequent, was (I can usually take care of myself and do my own things without adding to my pain) (n= 923, 83.5Per Cent). The lift and move things, the most frequent was (I can lift heavy objects without it adding to my pain) (n= 524, 47.4Per Cent). The walking, the most frequent was (The pain does not prevent me from walking any distance) (n= 801, 72.4Per Cent). The Sitting, the most frequent was (I can sit in any chair for as long as I want) (n= 661, 59.8Per Cent). The stand-up, most frequent was (I can stay standing as long as I want without increasing my pain) (n= 523, 47.3Per Cent). For sleep, the most frequent answer was (My sleep is never disturbed by pain) (n= 611, 55.2Per Cent). The Social-life, most frequent was (My social life is normal and does not cause me more pain) (n= 860, 77.8Per Cent).

Conclusion

The results of the study showed that most of the participants were married and taught in government jobs. The majority of them do not suffer from severe back pain that affects their lives. In addition, most of the study participants had good and effective communication.

Key Words

Osteoarthritis, Low Back Pain

Introduction

Osteoarthritis (OA) of the knee is the most common reason for knee pain and impairment[1]. Knee OA has one of the highest comorbidity rates [2] thus it's helpful to put the illness within the context of other disorders that affect it. people with knee OA are more likely to have discomfort and impairment if they also have low back pain (LBP), which occurs in 54.6Per Cent to 57.4Per Cent of these people [3,4]. A recent meta-analysis of cross-sectional studies[5] highlighted the critical role of LBP in knee OA by showing that concurrent LBP was related with increased knee OA symptoms and impairment.

Although Low Back Pain (LBP) is frequent in people with knee osteoarthritis (OA), there is little information on how LBP and knee pain relate to impairment. When both LBP and severe knee pain occur, the combined effect on disability is likely to be greater than that of either condition acting alone. Although Weiner et al.[6]. were unable to discover a significant interactional link between LBP and knee pain, they did find that older people (aged 70-79 years; n = 2,766) with LBP and knee pain had greater difficulties with most everyday activities than did those with LBP alone in older adults. Many previous studies focused on the independent effects of LBP on disability level. A better understanding of the LBP-knee pain interaction, in individuals with knee OA, would help clinicians and physical therapists identify those most likely to benefit from co-interventions designed to treat LBP and thereby improve the disability level of those with knee OA. This study aims to evaluate the clinical correlation between back pain and possible etiology of osteoarthritis in this pain.

The research problem at the heart of this study centers around the complex relationship between back pain and osteoarthritis among adults. Back pain and osteoarthritis are two prevalent musculoskeletal conditions that have a profound impact on the daily lives and well-being of individuals, particularly in the context of an aging population. While both conditions have been extensively studied in isolation, there remains a significant knowledge gap when it comes to understanding how they interact and influence each other. This lack of comprehensive understanding poses a considerable challenge for healthcare practitioners, as it hinders their ability to provide precise diagnoses and effective treatment strategies for individuals suffering from both back pain and osteoarthritis.

One key aspect of the research problem is the lack of clarity surrounding the risk factors and underlying mechanisms that contribute to the development and exacerbation of back pain and osteoarthritis when they co-occur. Without a detailed understanding of these factors, it is difficult to implement preventive measures and tailored interventions for patients facing this dual challenge. Additionally, the research problem encompasses the need to differentiate between the various types of back pain and their relationship to different forms of osteoarthritis. Such distinctions are essential for providing personalized care, and yet they are often overlooked in clinical practice due to the dearth of evidence-based guidelines.

Furthermore, the research problem is compounded by the increasing prevalence of both back pain and osteoarthritis, driven by factors such as aging populations and sedentary lifestyles. This growing healthcare burden calls for urgent attention to better comprehend the complex interplay of these conditions and to develop strategies that can mitigate their impact on public health and healthcare systems. Addressing this research problem can lead to improved diagnostic accuracy, more effective treatment strategies, and better outcomes for individuals suffering from back pain and osteoarthritis. Moreover, it can provide a foundation for future research endeavors and innovations in musculoskeletal health, which is of great significance given the broader health implications of these conditions.

Methods

Study design

This research employs a cross-sectional study design to investigate the clinical correlation between back pain and osteoarthritis in adults. Cross-sectional studies provide a snapshot of data at a specific point in time, making them suitable for assessing the prevalence and potential associations between variables of interest.

Study approach

The study will be conducted in diverse healthcare facilities and communities to capture a broad representation of the

adult population. These settings may include hospitals, clinics, rehabilitation centers, and community health programs.

Study population

The target population for this study comprises adults aged 18 to 50 who experience back pain and may or may not have a confirmed diagnosis of osteoarthritis. It will encompass both urban and rural populations to ensure diversity.

Study sample

A sample size of representative participants will be selected using a stratified random sampling technique. Stratification will be based on age groups and gender to ensure a balanced representation. Participants will be recruited from healthcare facilities and through community outreach.

Study tool

For the current study, a questionnaire was adopted for data collection, also categorized as a study tool.

Data collection

Data will be collected through an online questionnaire, which will be designed to capture demographic information, details of back pain, osteoarthritis diagnosis, lifestyle factors, and relevant clinical data. The questionnaire will be distributed through various online platforms, such as email, social media, and healthcare institution websites. In addition, participants will have the option to fill out a hard copy of the questionnaire during in-person data collection sessions.

Data analysis

Data analysis will involve the use of statistical software (SPSS). Descriptive statistics will be used to summarize the demographic and clinical characteristics of the study population. Bivariate and multivariate analyses will assess the correlation between back pain and osteoarthritis, accounting for potential confounders. Chi-squared tests, t-tests, and regression models will be used as appropriate.

Ethical considerations

This study will adhere to ethical guidelines, including obtaining informed consent from all participants. Data will be anonymized and stored securely. The research protocol will be submitted to the Institutional Review Board (IRB) or ethics committee for approval. Any potential conflicts of interest will be disclosed, and participants will be assured of the confidentiality and voluntary nature of their participation in the study. Informed consent will clearly explain the purpose of the study and the use of data for research purposes only, ensuring that participants' rights are protected.

Results

The study included 1106 participants. The most frequent age among them was 40-50 years (n= 486, 43.9Per Cent), followed by 18-28 years (n= 340, 30.7Per Cent). Figure 1 shows the age distribution among study participants. The most frequent gender among study participants was female (n= 560, 50.6Per Cent) followed by male (n= 546, 49.4Per Cent). Figure 2 shows the gender distribution among study participants. The most frequent marital status among study participants was married (n= 702, 63.5Per Cent), followed by single (n= 353, 31.9Per Cent). Figure 3 shows the distribution of marital status among study participants. The most frequent job among study participants was a government job (n= 480, 43.4Per Cent), followed by a private sector job (n= 177, 16Per Cent). Figure 4 shows the distribution of the jobs among study participants.

Duration of suffering from back pain among study participants with most of them being 1 to 5 years (n= 505, 45.7Per Cent), followed by nothing (n= 373, 33.7Per Cent), and the least was 23 years and above (n= 13, 1.2Per Cent). Participants were asked about evaluating the impact of back pain on life. For personal care, the most frequent was (currently, I do not feel any pain) (n= 514, 46.5Per Cent). The severity of pain, the most frequent, was (I can usually take care of myself and do my own things without adding to my pain) (n= 923, 83.5Per Cent). The lift and move things, the most frequent was (I can lift heavy objects without it adding to my pain) (n= 524, 47.4Per Cent). The walking, the most frequent was (The pain does not prevent me from walking any distance) (n= 801, 72.4Per Cent). The Sitting, the most frequent was (I can sit in any chair for as long as I want) (n= 661, 59.8Per Cent). The stand-up, most frequent was (I can stay standing as long as I want without increasing my pain) (n= 523, 47.3Per Cent). The sleep, the most frequent was (My sleep is never disturbed by pain) (n= 611, 55.2Per Cent). The Social life, most frequent was (My social life is normal and does not cause me more

Participants were asked about diseases. Their responses and results are presented in Table 1.

Participants were evaluating the back pain. Figure 5 shows the participants' back pain evaluation.

Discussion

In terms of prevalence, osteoarthritis (OA) and low back pain (LBP) rank first and second, respectively [7-11]. Pain and impairment are common outcomes of OA, the most common type of arthritis. Worldwide, OA affects around 15Per Cent of the population[12,13]. It is estimated that persons in the United States will spend about $12,000 over the course of their lives on treatment for knee osteoarthritis (KOA) [14]. In the West, LBP is also quite widespread, affecting up to 80Per Cent of the population at some point in their lives. It costs the healthcare system in the United Kingdom £1632 million [15].

However, the knee exercises prescribed for people with KOA may not be effective for all of them [16]. It's possible that KOA is complicated by other coexisting disorders such low back pain. Concurrent LBP was found in 57.4Per Cent of patients with KOA [17], indicating that this is a prevalent complaint among those who suffer from KOA. People who suffer from both OA and LBP have a lower QOL. The research does provide some support for the hypothesis that LBP causes KOA. KOA management should take into consideration any anatomical or functional risk factors for comorbid LBP, such as obesity or poor posture. No comprehensive evaluation has been done to yet to pool data on the mechanism, type, and causation of any common variables leading to concomitant LBP in KOA, therefore this information remains fragmented. In order to better understand the connection between LBP and KOA, it is important to compile data on their coexistence [18.]

Knee osteoarthritis (OA) is more common in those who also suffer from low back pain (57.4Per Cent), and people with OA who also have LBP have more severe knee pain. There may be a biomechanical link between these two disorders [19,20]. There is a lack of compiled data on the co-occurrence of these two debilitating conditions[21], and conflicting findings have been reported on the alignment of the spine, pelvis, lower extremities, and associated musculature [22-30].

Biomechanical associations

Biomechanical factors, such as joint angles and bone alignment, have been linked to low back pain and knee osteoarthritis in seven separate investigations. Significantly higher mismatches of lumbo-pelvic sagittal alignment may trigger the development and progression of KOA in individuals with degenerative spondylolisthesis (DS) [29-33]. Double adjacent level spondylolisthesis (when one vertebral body slides forward over another with its neural arch unharmed) was more common in the KOA group (33.3Per Cent) than in the non-KOA group (18.1Per Cent) [29]. When compared to individuals without KOA, those with DS had a larger pelvic incidence (PI; mean SD, 58.0° 10.4) and pelvic tilt (PT; mean SD, 27.2° 9.8), and a greater pelvic incidence-lumbar lordosis (PI-LL; mean SD, 30.6° 10.0) overall. This demonstrates that these characteristics contribute to KOA complications in people with DS [29]. Patients over the age of 65 who suffer from severe KOA and degenerative lumbar spondylolisthesis (DLS) have a different pelvic morphology than those who suffer from mild to moderate KOA [30]. In addition to exhibiting double-level listhesis and increased knee flexion (mean SD, 10.1° 5.3), these patients also showed higher sagittal malalignment and a lack of lumbar lordosis. Mean standard deviation values for lumbo-pelvic sagittal alignment parameters were as follows: PT = 27.2° 9.8 and 22.2° 8.6; LL = 17.9° 15.1 and 10.3° 12.9; PI-LL = 17.9° 10.0 and 30.6° 8.9; and KOA group = 40.4° 15.8 and 42.6° 14.3. These individuals tended to have a larger amount of pelvic retroversion (mean SD, 34.1° 10.8), suggesting that a compensating mechanism was at work [30]. When compared to those with mild OA, those with severe OA had a smaller degree of lumbar lordosis (mean SD, 34.9° 14.6) and a greater pelvic incidence (the angle between the line perpendicular to the sacral end plate at its midpoint and a line connecting this point to the axis of the femoral head), pelvic tilt, and knee flexion angle (KFA) (p = 0.05).

In the severe OA group, the rate of radiographic adjacent-segment disease (ASD) was found to be higher than in the mild OA group (38Per Cent; p = 0.02). ASD is a condition that encompasses many complications of spinal fusion, including listhesis, instability, herniated nucleus pulposus, stenosis, hypertrophic facet arthritis, scoliosis, and vertebral compression fracture [31-35]. Compared to patients without ASD, those with severe OA and ASD had substantially higher PT (mean SD, 26.2° 7.0) and lower LL (38.7° 12.2) (p 0.05). Spondylolisthesis and knee osteoarthritis (KOA) are both increased in likelihood when the PI is high (>58.3°) [26]. Individuals with a high PI (58.3°) compared to those with a low PI (49.5°) had a greater incidence of knee OA (p = 0.03).

The angle of pelvic anterior tilt was observed to be considerably larger in patients with KOA in both the LBP and non-LBP groups, at 44.68 degrees. There was no statistically significant difference between KOA patients with and without LBP in terms of anterior trunk inclination angle or sagittal alignment. Severe KOA substantially impacted the sagittal alignment of the spine, pelvis, and lower extremity axis. The lumbar spine receives the majority of the

compensation, with additional compensation coming from hip flexion and pelvic anteversion. It is possible that sagittal alignment changes play no role in the etiology of LBP in this patient group. Backward Femoral inclination (FI), hip flexion, and forward spinal inclination were significantly more common in patients with severe KOA compared to controls (without KOA). In addition, compared to controls, patients with FI 10° had decreased lumbar lordosis and a substantial forward spinal inclination, whereas those with FI 10° displayed pronounced pelvic anteversion and hip flexion. There is evidence that those over the age of 50 who suffer from severe KOA also have poor lumbo-pelvic sagittal alignment. There was a correlation between KOA severity and lumbo-pelvic sagittal alignment, but not with global spinal balance. The KOA was shown to have a significant correlation with the retroversion of the pelvis. The development of KOA may be influenced by pelvic retroversion. On the flip side, deterioration of the knee joint may have an impact on pelvic retroversion. Standing varus knee deformity and hip external rotation are linked to pelvic retroversion through kinematic chain reaction. The medial tibiofemoral stress is increased in a varus knee, which has been linked to osteoarthritis of the knee . Therefore, pelvic retroversion and other forms of sagittal lumbo-pelvic malalignment may contribute to the development of KOA. Women with lumbar kyphosis also reported less symptoms according to the Knee Society's Knee Scoring System[33].

Range of motion (ROM)

The effects of LBP and KOA on spinal and knee range of motion were evaluated. Both KOA groups had a decreased ipsilateral knee flexion angle during the downward reach and pickup motions (median with LBP — 9.11° and without LBP — 8.99°) compared to controls (median without KOA and LBP — 15.45°).

Both groups of people with KOA (those with low back pain and those without) had smaller trunk flexion angles (median: with LBP = 27.65°; without LBP = 27.44°) than the control group (people without KOA or LBP, median= 40.43°), and the non-LBP group had a smaller rotation angle (median = 6.01°) than the control group (9.15°).

Conclusion

The results of the study showed that most of the participants were married and taught in government jobs. The majority of them do not suffer from severe back pain that affects their lives. In addition, most of the study participants had good and effective communication.

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ANNEX 1: Data Collection Tool

1. What is your gender?
• Male
• Female
2. How old are you?
• 18-28
• 29-39
• 40-50
3. What is your marital status?
• Single
• Married
• divorced
• widow
4. What is your educational level?
• Uneducated
• The school
• The university
5. what is your job?
• Does not work
• Student
• Government job
• Private sector job
• Free work
• other
6. Do you have a chronic disease?
• Yes
• No
7. Do you have arthritis?
• Yes
• No
8. Do you have a diabetes?
• Yes
• No
9. Do you have a high blood pressure disease?
• Yes
• No
10. Do you have a cardiovascular disease?
• Yes
• No
11. Do you have a respiratory disease?
• Yes
• No
12. Do you have a kidney disease?
• Yes
• No
13. Do you have a rheumatic disease?
• Yes
• No
14. How do you feel the severity of the pain?
• Currently, I do not feel any pain
• I currently feel mild pain
• I currently feel moderate pain
• I am currently feeling severe pain
• I currently feel very severe pain
• I'm currently feeling worse pain than I could ever imagine
15. How do you do the personal care?
• I can usually take care of myself and do my own things without adding to my pain
• I can take care of myself and do my own things, but I feel a lot of pain when I do it
• I can take care of myself and do my own things but slowly and carefully
• I need some help, but I can do most of my own things
• I need help daily to do my own things
• I stay in bed and cannot get dressed and cannot shower on my own
16. How can you lift and move things?
• I can lift heavy objects without it adding to my pain
• I can lift heavy things, but that increases my pain

• The pain prevents me from lifting weights if they are on the ground, but I can deal with them if they are in a high position - such as a stretcher, for example.
• The pain prevents me from lifting heavy objects, but I can handle lifting light and medium-weight objects if I am in the right position.
• I can only lift lightweight objects
• I cannot lift or carry anything at all
17. How are you walking?
• The pain does not prevent me from walking any distance
• The pain prevents me from walking more than a kilometers and a half
• The pain prevents me from walking more than four hundred meters
• The pain prevents me from walking more than a hundred meters
• I can walk only using a cane or crutch
• I stay in bed most of the time and crawl to get to the toilet
18.How are you sitting?
• I can sit in any chair for as long as I want
•I can just sit in my favourite chair for as long as I want
• The pain prevents me from sitting in a chair for more than an hour
• The pain prevents me from sitting in a chair for more than half an hour
• The pain prevents me from sitting in the chair for more than ten minutes
• The pain prevents me from sitting at all
19. How are you stand up?
• I can stay standing as long as I want without increasing my pain
• I can stay standing as long as I want, but it increases my pain
• The pain prevents me from standing for more than an hour
• The pain prevents me from standing for more than half an hour
• The pain prevents me from standing for more than ten minutes
• The pain prevents me from standing at all
20. How are you sleep?
• My sleep is never disturbed by pain
• The pain affects my sleep sometimes
• I sleep less than 6 hours a day because of the pain
• I sleep less than 4 hours a day because of the pain
• I sleep less than two hours a day because of the pain
• The pain prevents me from sleeping at all
21. How are your social life?
• My social life is normal and does not cause me more pain
• My social life is normal, but it increases my pain
• The pain does not significantly affect my social life, but it reduces my activities that require a lot of effort
• The pains have limited my social life, so I don't go out as usual as I used to
• Because of the pain, my social life became confined to the home
• Because of the pain, my social life was interrupted
22. How do you travel?
• I can travel anywhere without it adding to my pain
• I can travel anywhere, but it increases my pain
• The pain is severe, but I can handle trips in about two hours
• The pain limits my trips to less than an hour
• The pain limits my necessary short trips of less than half an hour
• The pain prevents me from making trips anywhere except to receive treatment

APPENDIX 2: Participants responses to scale items

variable		Frequency	Percent
Age	**18-28**	340	30.7Per Cent
	29-39	280	25.3Per Cent
	40-50	486	43.9Per Cent
Gender	**Male**	546	49.4Per Cent
	Female	560	50.6Per Cent

educational level	**uneducated**	15	1.4Per Cent
	the school	213	19.3Per Cent
	the university	878	79.4Per Cent
marital status	**single**	353	31.9Per Cent
	married	702	63.5Per Cent
	divorced	31	2.8Per Cent
	widow	20	1.8Per Cent
job	**Does not work**	165	14.9Per Cent
	Student	170	15.4Per Cent
	Government job	480	43.4Per Cent
	Private sector job	177	16.0Per Cent
	Free work	50	4.5Per Cent
	other	64	5.8Per Cent

	Yes	**No**
Do you have a chronic disease?	259	847
	23.4Per Cent	76.6Per Cent
Do you have arthritis?	225	881
	20.3Per Cent	79.7Per Cent
Do you have diabetes?	163	943
	14.7Per Cent	85.3Per Cent
Do you have a high blood pressure disease?	121	985
	10.9Per Cent	89.1Per Cent
Do you have a cardiovascular disease?	37	1069
	3.3Per Cent	96.7Per Cent
Do you have a respiratory disease?	114	992
	10.3Per Cent	89.7Per Cent
Do you have a kidney disease?	23	1083
	2.1Per Cent	97.9Per Cent

	75	1031
Do you have a rheumatic disease?	6.8Per Cent	93.2Per Cent

Any other diseases you suffer from?				
Thyroid	**Anemia**	**Cholesterol**	**The colon**	**Gout**
26	7	6	3	4

Back Pain Evaluation		
	Frequency	Percent
(no pain) 1	327	29.6Per Cent
2	85	7.7Per Cent
3	116	10.5Per Cent
4	105	9.5Per Cent
5	158	14.3Per Cent
6	93	8.4Per Cent
7	73	6.6Per Cent
8	73	6.6Per Cent
9	20	1.8Per Cent
(very severe pain) 10	56	5.1Per Cent

Duration Back Bain		
	Frequency	Percent
0	373	33.7Per Cent
1 to 5 years	505	45.7Per Cent

6 to 11 years	150	13.6Per Cent
12 to 17 years	39	3.5Per Cent
18 to 22 years	26	2.4Per Cent
23 years and above	13	1.2Per Cent

Severity of the Pain		
	Frequency	Percent
Currently, I do not feel any pain	514	46.5Per Cent
I currently feel mild pain	316	28.6Per Cent
I currently feel moderate pain	223	20.2Per Cent
I am currently feeling severe pain	44	4.0Per Cent
I currently feel very severe pain	5	0.5Per Cent
I'm currently feeling worse pain than I could ever imagine	4	0.4Per Cent

Personal Care		
	Frequency	Percent
I can usually take care of myself and do my own things without adding to my pain	923	83.5Per Cent
I can take care of myself and do my own things, but I feel a lot of pain when I do it	97	8.8Per Cent
I can take care of myself and do my own things but slowly and carefully	62	5.6Per Cent
I need some help, but I can do most of my own things	17	1.5Per Cent
I need help daily to do my own things	4	0.4Per Cent
I stay in bed and cannot get dressed and cannot shower on my own	3	0.3Per Cent

lift and move things		
	Frequency	Percent
I can lift heavy objects without it adding to my pain	524	47.4Per Cent
I can lift heavy things, but that increases my pain	340	30.7Per Cent
The pain prevents me from lifting weights if they are on the ground, but I can deal with them if they are in a high position - such as a stretcher, for example.	65	5.9Per Cent
The pain prevents me from lifting heavy objects, but I can handle lifting light and medium-weight objects if I am in the right position.	59	5.3Per Cent
I can only lift lightweight objects	109	9.9Per Cent
I cannot lift or carry anything at all	9	0.8Per Cent

walking		
	Frequency	Percent
The pain does not prevent me from walking any distance	801	72.4Per Cent
The pain prevents me from walking more than a kilometers and a half	204	18.4Per Cent
The pain prevents me from walking more than four hundred meters	57	5.2Per Cent
The pain prevents me from walking more than a hundred meters	33	3.0Per Cent
I can walk only using a cane or crutch	9	0.8Per Cent
I stay in bed most of the time and crawl to get to the toilet	2	0.2Per Cent

Sitting		
	Frequency	Percent

I can sit in any chair for as long as I want	661	59.8Per Cent
I can just sit in my favorite chair for as long as I want	265	24.0Per Cent
The pain prevents me from sitting in a chair for more than an hour	135	12.2Per Cent
The pain prevents me from sitting in a chair for more than half an hour	35	3.2Per Cent
The pain prevents me from sitting in the chair for more than ten minutes	6	0.5Per Cent
The pain prevents me from sitting at all	4	0.4Per Cent

Stand Up		
	Frequency	Percent
I can stay standing as long as I want without increasing my pain	523	47.3Per Cent
I can stay standing as long as I want, but it increases my pain	378	34.2Per Cent
The pain prevents me from standing for more than an hour	111	10.0Per Cent
The pain prevents me from standing for more than half an hour	55	5.0Per Cent
The pain prevents me from standing for more than ten minutes	32	2.9Per Cent
The pain prevents me from standing at all	7	0.6Per Cent

Sleep		
	Frequency	Percent
My sleep is never disturbed by pain	611	55.2Per Cent
The pain affects my sleep sometimes	412	37.3Per Cent
I sleep less than 6 hours a day because of the pain	54	4.9Per Cent
I sleep less than 4 hours a day because of the pain	20	1.8Per Cent

I sleep less than two hours a day because of the pain	3	0.3Per Cent
The pain prevents me from sleeping at all	6	0.5Per Cent

Social life		
	Frequency	Percent
My social life is normal and does not cause me more pain	860	77.8Per Cent
My social life is normal, but it increases my pain	122	11.0Per Cent
The pain does not significantly affect my social life, but it reduces my activities that require a lot of effort	84	7.6Per Cent
The pains have limited my social life, so I don't go out as usual as I used to	33	3.0Per Cent
Because of the pain, my social life became confined to the home	7	0.6Per Cent
Because of the pain, my social life was interrupted	0	0.0Per Cent

Travel		
	Frequency	Percent
I can travel anywhere without it adding to my pain	756	68.4Per Cent
I can travel anywhere, but it increases my pain	275	24.9Per Cent
The pain is severe, but I can handle trips in about two hours	41	3.7Per Cent
The pain limits my trips to less than an hour	14	1.3Per Cent
The pain limits my necessary short trips of less than half an hour	11	1.0Per Cent
The pain prevents me from making trips anywhere except to receive treatment	9	0.8Per Cent

SPSS

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.524[a]	0.274	0.267	0.345

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.165	11	4.470	37.595	.000[b]
	Residual	130.062	1094	.119		
	Total	179.227	1105			

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.245	0.093		13.366	0.000
	Rheumatic disease	0.463	0.043	0.289	10.833	0.000
	Back pain evaluation	-0.008-	0.005	-0.057-	-1.681-	0.093
	Severity of pain	-0.035-	0.015	-0.081-	-2.352-	00.019
	Personal care	0.016	0.018	.028	.871	0.384
	Lift move things	-0.043-	0.009	-0.142-	-4.546-	0.000
	walking	-0.054-	0.017	-0.110-	-3.190-	0.001
	sitting	0.046	0.015	0.103	3.182	0.002
	Stand up	-0.019-	0.014	-0.051-	-1.411-	0.159
	sleep	-0.051-	0.018	-0.097-	-2.897-	0.004
	Social life	-0.007-	0.018	-0.015-	-.414-	0.679
	travel	-0.036-	0.016	-0.073-	-2.281-	0.023
a. Dependent Variable: arthritis						

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