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Sciatica pain in Saudi population: Knowledge and attitude towards sciatica pain and treatment methods among the population of Hail in Saudi Arabia

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ABSTRACT

Background: Pain that exudes and radiate to lower back side and towards the back of leg is defined as sciatica. Aim of this study is to assess the level of knowledge and attitude towards sciatica pain and treatment methods among the population of Hail in Saudi Arabia. **Methods:** A well-defined questionnaire was conceded among the general population. The study subjects include both male and female gender involving the age above 18 years. The data was collected and questionnaire was used to assess public knowledge and awareness of sciatica symptoms, causes, risk factors, complications and treatment. Duration of study was six month and after collection of data, it was analyzed using the Statistical Package of Social Science Software (SPSS). **Results:** Among 298 respondents, 206 (69.1%) were females and 148 (49.7%) aged between 18-30 years old. Regarding sciatica pain, 64.4% of participants defined that *most distinctive sign of sciatica is pain that radiates from your lower back into the back or side of your leg*. According to multiple regression variables are statistically significantly predicted VO_{2max} , $F(6, 291) = 5.131, p < .0005, R^2 = .096$. Sciatica was known to of the respondents and 32% were use *Physiotherapy and steroid injections are methods to reduce/treat sciatica*. **Conclusion:** Saudi populations have less knowledge about sciatica, as knowledge score (*mean ± SD*) is $3.6 ± 2.48$ its causes and the nature of pain and treatment remedies. Patient education is crucial to treating sciatica. Sciatica can have a variety of reasons.

Keywords: Sciatica, Lumbar Dermatomes, Prevalence, lumbosacral Reticular Syndrome

1. INTRODUCTION

The term sciatica often referred to as lumbosacral radicular syndrome, nerve root compromise, nerve root discomfort and nerve root entrapment, is a general term for a number of symptoms (Jensen et al., 2019; Saleem et al., 2019; Alqahtani et al., 2022) is characterized by radiating leg discomfort towards to lower leg or sacral dermatomes. Evidence from basic science and clinical studies suggests that for the nerve root to manifest symptoms, both inflammation and compression are (Jensen et al., 2019; Saleem et al., 2019; Valat et al., 2010) there is a huge disparity between research' estimates of the prevalence of sciatica. This could be as a result of various definitions, different data gathering techniques or perhaps the population under study. According to various researches, sciatica was prevalent in between 1.6% in the non-disease individual to 43% in a selected study subjects (Konstantinou and Dunn, 2008; Kumar et al., 2011). Both gender and body mass had little bearing on the development of sciatica, according to a cross-sectional research of 2946 women and 2727 men, however body mass may have been linked to low back pain (Davis et al., 2022; Kumar et al., 2011). No correlation with body height has been established, with the exception of people 50 to 60 years old. Peak occurrence occurs in study subjects who are in their fourth decade and it rarely affects patients younger than 20 unless it is also related to trauma. Some studies do indicate a genetic predisposition (Davis et al., 2022; Kumar et al., 2011). It has also been demonstrated that physical activity related to a job affects the prevalence of sciatica. Sciatica is more common in machine operators and carpenters than in sedentary office employees (Davis et al., 2022; Kumar et al., 2011; Riihimaki et al., 1994). Risk factors for sciatica related to the workplace included awkward working positions, twisting or flexing the trunk and working with the hand over the shoulder. Driving is also connected favorably with sciatica or herniated lumbar discs (Kumar et al., 2011). Most individuals with acute sciatica have a fair prognosis, but 20% to 30% continue to suffer symptoms a year or two later. Patients with sciatica frequently have unilateral leg pain that is worse than low back pain. A typical sign is pain that radiates posteriorly at the leg and below the knee. Patients frequently express deep-seated ache or a burning feeling in addition to the discomfort or paresthesia. The physical examination and the patient's medical history are used to make the diagnosis. And only patients with "red flag" illnesses or those contemplating disc surgery should get imaging, according to experts. The earlier submissive remedy has been replaced with more active ones. The first 6 to 8 weeks of treatment should be conservative, according to consensus. However, disc surgery might provide faster pain relief for the legs than conservative care, but after a year or two, little to no difference is noticeable (Koes et al., 2007). Therefore, the purpose of this study was to assess the level of knowledge of sciatica among the population of the Hail region regarding its prevalence, treatment options and methods of management.

2. METHODS

Study design

This was an analytical cross-sectional study to assess the awareness regarding etiologies and risk factor and diagnostic method of sciatica pain. Since the aim of the study was to determine the relationship between to determine their level of awareness and create more advance methods to educate the general population to cope up the difficult situation and take good care of their health.

Study setting

The study was carried out among Saudi population. Data were collected from general population using questionnaire during the period from 22 August to 20th January 2023.

Sampling and sample

Participants were chosen via probability simple random sampling technique. Participants were selected from the general population. The expected number of sample size was 300 participants. However, the study included 298 participants.

Inclusion criteria

General population

Exclusion criteria

Age below 18 years and people living outside the Kingdom

Data analysis

Data were extracted, coded, and was analyzed by statistical package for social sciences (SPSS) version 25 on Mac. A P-value of 0.05 was used for statistical significance in all tests. Chi-square test and Fischer exact results were used to correlate between nominal and

nominal variables. Kruskal-Wallis and Mann-Whitney tests were used for the relationship between nominal and scale variables, while Pearson r correlation test was used between scale variables. Any participants who were less than 18 years old or out of Hail city were excluded from the analysis.

Ethical Consent

Administrative approval will be sought from the unit of biomedical ethics research committee Ethical approval was sought from the ethical committee of the faculty of medicine (no H-2022-347) university of Hail. An informed consent was taken from the all participants.

3. RESULTS

298 participants have completed the questionnaire in which 206 (69.1%) were females and 148 (49.7%) aged between 18-30 years old. Participants having among those characteristics, only age, educational level, the region and the occupation were significantly associated with the diagnosis of sciatica with p-values 0.002, 0.016, 0.002, <0.001, respectively. More details about the demographics of this cohort are found (Table 1).

Table 1 Socio-demographic data of the participants ($n=298$)

		Diagnosed with Sciatica		p-value
Characteristics	No. (%)	Yes ($n=37$)	No ($n=261$)	
Gender				
<i>Male</i>	92 (30.9%)	20	72	0.002*
<i>Female</i>	206 (69.1%)	17	189	
Age				
<i>18-30</i>	148 (49.7%)	12	136	0.07
<i>31-50</i>	110 (36.9%)	18	92	
<i>50 and more</i>	40 (13.4%)	7	33	
Nationality				
<i>Saudi</i>	279 (93.6%)	33	246	0.272
<i>Non-Saudi</i>	19 (6.4%)	4	15	
Educational level				
<i>Illiterate</i>	21 (7%)	8	13	0.016*
<i>Elementary school</i>	9 (3%)	1	8	
<i>Intermediate school</i>	15 (5%)	3	12	
<i>High school or diploma degree</i>	111(37.2%)	11	100	
<i>Bachelor's degree</i>	119 (39.9%)	13	106	
<i>Graduate studies</i>	23 (7.7%)	1	22	
Region status				
<i>Rural areas of Hail</i>	54 (18.1%)	14	40	0.002*
<i>Urban areas of Hail</i>	244 (81.9%)	23	221	
Occupation				
<i>University student</i>	92 (30.9%)	4	88	<0.001
<i>Educational services</i>	33 (11.1%)	3	30	
<i>Field worker (military, fire worker)</i>	26 (8.7%)	10	16	
<i>Healthcare worker</i>	20 (6.7%)	1	19	
<i>Office worker</i>	21 (7%)	5	16	
<i>Unemployed</i>	106 (35.6%)	14	92	

Regarding the knowledge about sciatica, the mean and SD were 3.6 ± 2.48 in which 183 (61.4%) had poor knowledge. On the contrary, attitude mean and SD were 38.2 ± 7.95 with 67.1% having neutral attitude toward sciatica. More details are found (Table 2, 3) (Figure 1, 2, 3).

Figure 4 shows the correlation between the knowledge score and attitude score in which it shows significant relationship (p -value < 0.001 ; $r=0.388$) using Pearson r correlation test.

Regarding the analysis of the sociodemographic data with knowledge and attitude scores, Table 4 represents the whole data thoroughly. Region and occupation were the only factors with significant relationship with the knowledge score. On the other side, gender, age, region and occupation were the factors that are significantly related with attitude score.

A multiple regression was run to predict attitude score from gender, age, nationality, educational level, region and occupation. These variables statistically significantly predicted VO₂max, $F(6, 291) = 5.131$, $p < .0005$, $R^2 = .096$. Only gender and region variables added statistically significantly to the prediction, $p < .05$. More details are found (Table 5).

Table 2 Knowledge regarding Sciatica ($n=298$)

	Characteristics	Correct answer N (%)
	Knowledge statements	
1	<i>The most distinctive sign of sciatica is pain that radiates from your lower back into the back or side of your legs</i>	192 (64.4%)
2	<i>Pain, numbness, tingling sensation extending from the lower back down to toes and weakness of leg/foot muscles are symptoms of sciatica</i>	178 (59.7%)
3	<i>Age, weight, nature of work and prolonged sitting are risk factors of sciatica</i>	177 (59.4%)
4	<i>NSAIDs and muscle relaxants are methods to reduce/treat sciatica</i>	130 (43.6%)
5	<i>The most common cause of sciatica is a herniated vertebral disc, which often occurs with age</i>	118 (39.6%)
6	<i>Physiotherapy and steroid injections are methods to reduce/treat sciatica</i>	98 (32.9%)
7	<i>People with sciatica should avoid movement as it may cause more injury</i>	79 (26.5%)
8	<i>Sciatica is thought to be preventable and it may not recur</i>	55 (18.5%)
9	<i>Having sciatica may mean you will end up with movement disability</i>	46 (15.4%)
	Knowledge score (<i>mean ± SD</i>)	3.6 ± 2.48
	Level of knowledge	
	<i>Poor</i>	183 (61.4%)
	<i>Moderate</i>	75 (25.2%)
	<i>Good</i>	40 (13.4%)

Table 3 Attitude regarding Sciatica ($n=298$)

	Characteristics	Mean ± SD
	Attitude statements	
1	<i>Regular exercising and proper sitting can significantly contribute to back protection</i>	3.98 ± 1.12
2	<i>Spinal CT/MRI can diagnose sciatica</i>	3.82 ± 1.1
3	<i>The severity of pain varies from mild to very severe and it intensifies when sneezing or coughing or after prolonged sitting</i>	3.71 ± 1.12
4	<i>Surgical intervention is the last method to relieve sciatica</i>	3.56 ± 1.18
5	<i>Mustard oil massage can reduce/treat sciatica pain</i>	3.51 ± 1.12
6	<i>Cupping therapy can reduce/treat sciatica pain</i>	3.38 ± 1.2
7	<i>Moxibustion and cauterization can reduce/treat sciatica pain</i>	3.37 ± 1.28
8	<i>FASD (blood-letting) is one of the most effective ways in reducing/treating sciatica</i>	3.29 ± 1.2
9	<i>Traditional therapy is more effective than medical intervention in treating sciatica</i>	3.22 ± 1.17
10	<i>Acupuncture can reduce/treat sciatica pain</i>	3.13 ± 1.1
11	<i>Drinking turmeric and cinnamon mixed with warm milk can</i>	3.12 ± 1.23

	<i>reduce/treat sciatica pain</i>	
	Attitude score (Mean \pm SD)	38.2 \pm 7.95
	Attitude level	
	Negative	12 (4%)
	Neutral	200 (67.1%)
	Positive	86 (28.9%)

Table 4 Analysis of the socio-demographic data with knowledge and attitude scores (Mean rank)

Characteristics	Knowledge	Attitude
Gender ^a		
Male	162.68	170.09
Female	143.61	140.31
<i>p-value</i>	0.075	0.006
Age ^b		
18-30	146.26	129.81
31-50	152.29	165.12
50 and more	153.81	179.41
<i>p-value</i>	0.806	<0.001
Nationality ^a		
Saudi	149.46	150.97
Non-Saudi	150.08	127.97
<i>p-value</i>	0.976	0.259
Educational level ^b		
Illiterate	160.38	185.48
Elementary school	137.67	133.11
Intermediate school	146.13	178.53
High school or diploma degree	147.88	139.94
Bachelor's degree	144.28	145.16
Graduate studies	181.22	172.74
<i>p-value</i>	0.521	0.106
Region ^a		
Rural areas of Hail	172.42	184.49
Urban areas of Hail	144.43	141.76
<i>p-value</i>	0.029	0.001
Occupation ^b		
University student	156.68	134.76
Educational services	149.03	153.68
Field worker (military, fire worker)	194.35	221.33
Healthcare worker	173.53	172.48
Office worker	141.86	155.36
Unemployed	129.4	137.88
<i>p-value</i>	0.009	<0.001

^aP-value has been calculated using the Mann-Whitney Z-test.

^bP value has been calculated using the Kruskal-Wallis H-test.

** significance is determined at P < 0.05 level.

Notes:

Males have more attitude score compared to females

The more the age the more the attitude score

Rural areas of Hail carry more knowledge and attitude score compared to urban areas

Field workers have the highest score in knowledge and attitude among other occupations

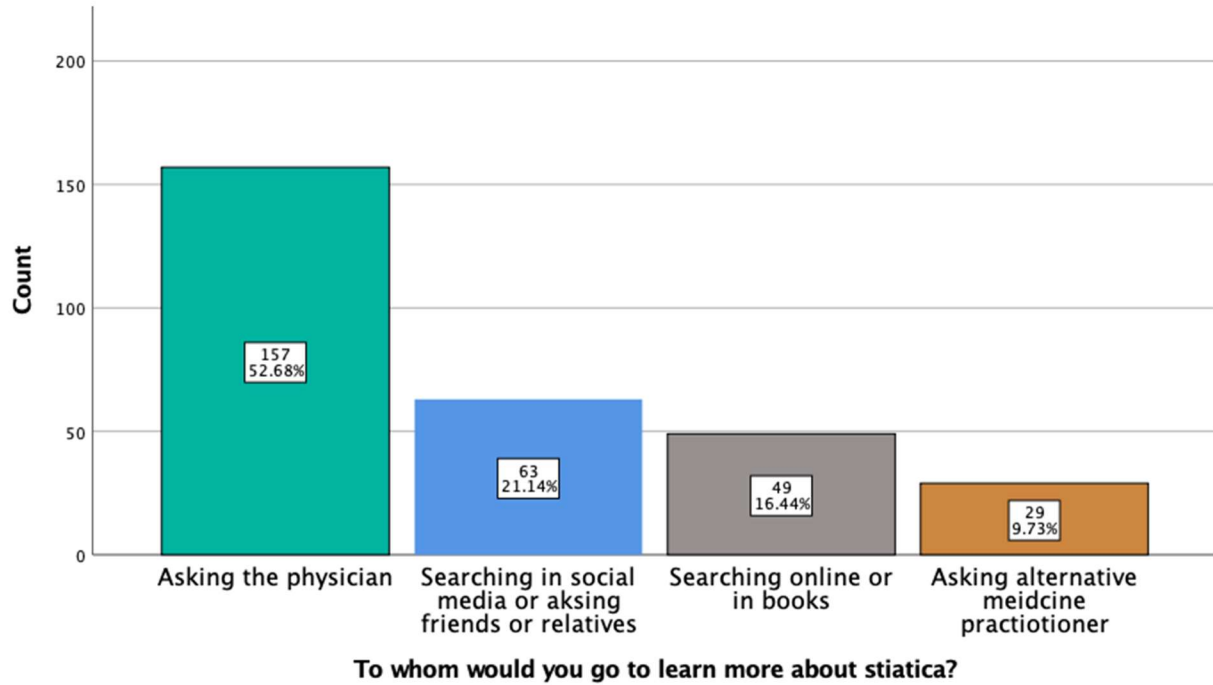


Figure 1 How participants would learn more about sciatica

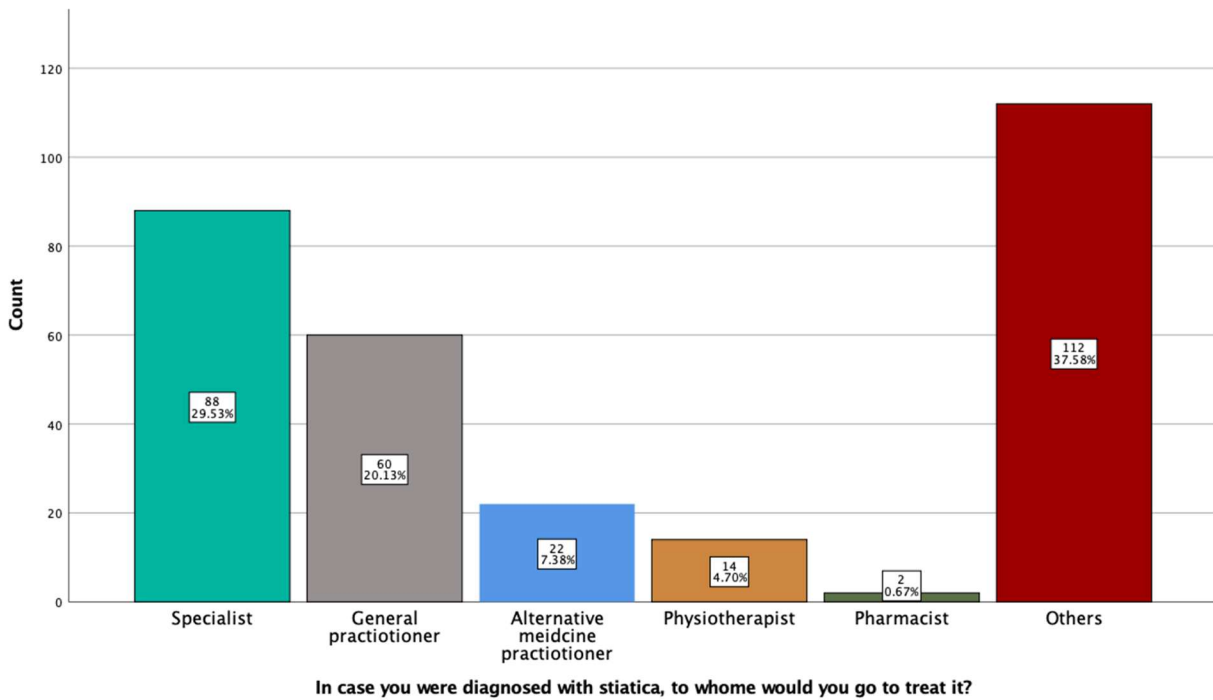


Figure 2 To whom participants would seek medical help in case they were diagnosed with sciatica

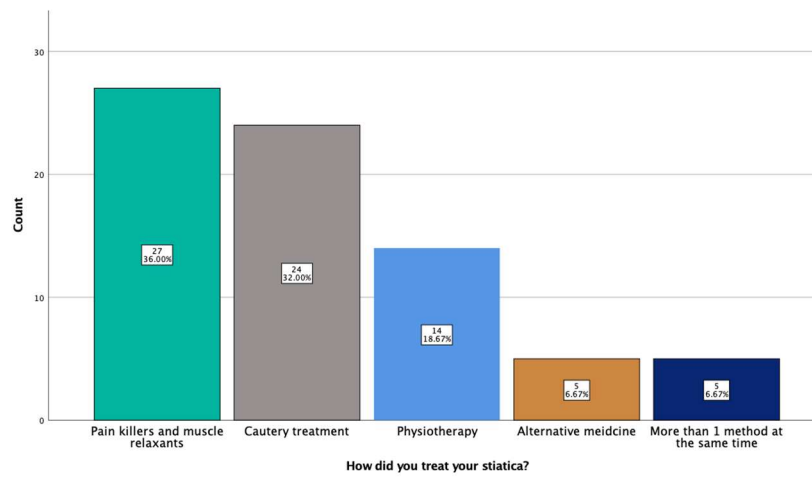


Figure 3 How participants treated their sciatica

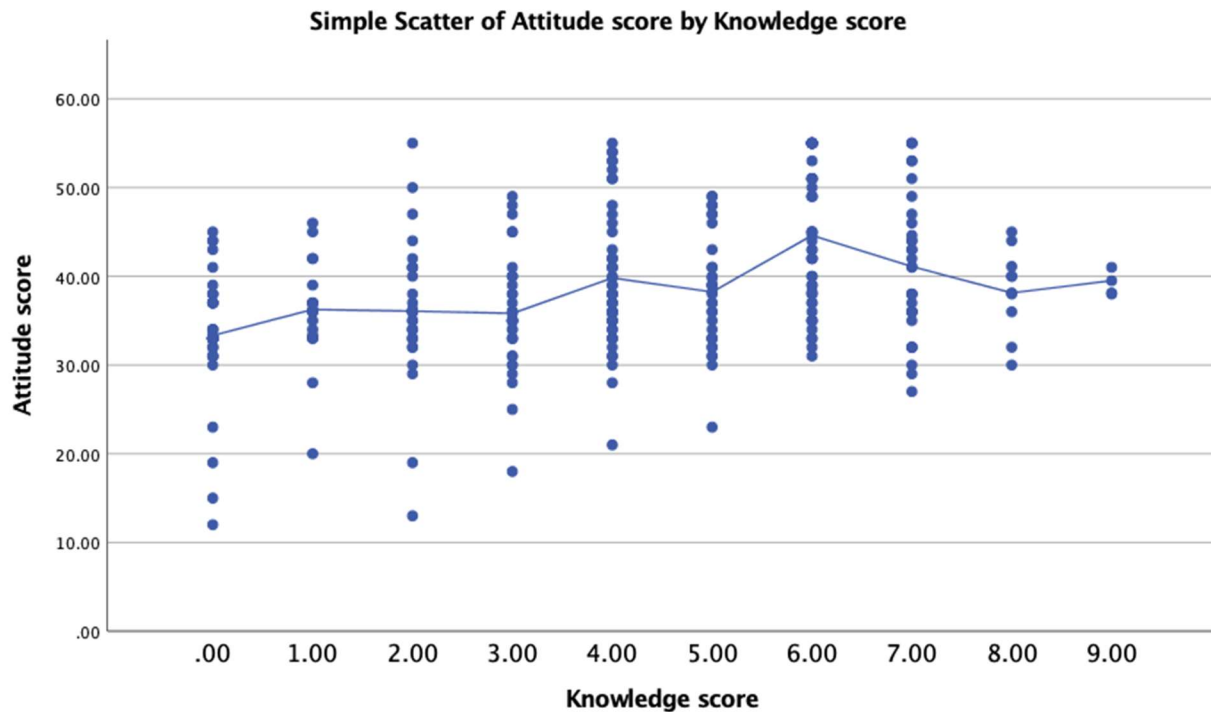


Figure 4 Correlation (Pearson r) between the knowledge score and attitude score

r=0.388, p-value < 0.001; significant

Table 5 Binary multiple regression predicting likelihood of attitude score

	B	SE	p-value	Odds ratio (Exp(B))	95% CI for EXP (B)	
					Lower	Upper
Gender	2.615	1.038	.012	.152	.571	4.658
Age	1.203	.713	.093	.107	-.200	2.606
Nationality	2.510	1.833	.172	.077	-1.097	6.117
Region	-2.863	1.204	.018	-.139	-5.232	-.494
Educational level	.188	.273	.492	.039	-.349	.725
Occupation	-.282	.306	.358	-.060	-.883	.320

4. DISCUSSION

Musculoskeletal pain (MSP) particularly back and neck pain are common in Western industrialized countries. Approximately more than seventy percent of all people will have one or more episodes of leg pain during their lives in elderly population and few of them will have one or more experiences the back ach as long-term consequences. The ventral rami of the L4 to S3 spinal nerves come together in the pelvis to create the sciatic nerve (SN), which runs along the lower leg. At the level of the upper angle of the popliteal fossa, it splits into its branches in tibial and common perneal nerve, exiting the pelvis through the larger sciatic foramen below the piriformis (Adibatti and Sangeetha, 2014). Sciatica, which is a common name for the lumbar radicular disease, is a condition that affects this nerve (Oosterhuis et al., 2019). The syndrome is characterized by lower limb discomfort radiating towards downward in a region of the leg supplied by one or more lumbosacral nerve roots. Deficits in the senses and in movement are possible additional neurological abnormalities (Oosterhuis et al., 2019; Pinto et al., 2012). It is predicted that between 14% and 3% of people may experience it annually. The compression of the nerve root and the resulting inflammation are part of the pathophysiology of sciatica (Valat et al., 2010).

Age-related degenerative changes are the most frequent primary cause of disc herniation, with trauma being a rare secondary cause. Most patients recover without surgery, which is thought to be due to the herniated disc material resorbing as a result of the inflammatory response (Jensen et al., 2019). The onset of sciatica might be gradual or sudden with exercise. Sciatica extends along a broad axis from the middle or lower buttock when the L5 nerve root is compressed, migrating posteriorly in cases of S1 compression and dorsolateral in cases of L5 nerve root compression. L4 compression-induced thigh pain that radiates anterolaterally could be misconstrued for hip illness. Sciatica is often unilateral because to dorsolateral disk rupture pattern predominance and foraminal stenosis brought on by osteoarthritis of the spine. Bilateral pain may be brought on by lumbar stenosis, central disk herniation and spondylolisthesis (Fernandez et al., 2016; Ropper and Zafonte, 2015; Valat et al., 2010). Other medical problems, such as sacroiliac joint (Visser et al., 2013), myofascial (Cannon et al., 2007) and degenerative hip joint pain (Swezey, 2003), can also mimic sciatica. There are a few known personal and work-related risk factors for sciatica, such as age, most cases of sciatica occur in patients who are in their fourth decade (Davis et al., 2022; Jensen et al., 2019). Also, there is an increase in risk with height (Koes et al., 2007) however; some studies claim that, with the exception of those between the ages of 50 and 60, there is no association between body height and risk (Davis et al., 2022; Kumar et al., 2011). Smoking has been linked to sciatica and several hypotheses have been offered, including the potential that smoking may have fibrinolytic effects or that it changes the metabolic balance of the intervertebral discs (Kumar et al., 2011).

The incidence of sciatica has also been demonstrated to be influenced by physical activity related to a job, such as frequent lifting, particularly while bending and twisting, sciatica and herniated lumbar discs are both strongly correlated with driving. It's likely that driving exposes one to vibrations at 4-5 Hz, which may coincide with the spine's resonant frequency when one is seated and consequently have a direct mechanical impact on the lumbar disc (Davis et al., 2022; Koes et al., 2007; Kumar et al., 2011). There is conflicting data supporting a link between sciatica and sex or physical fitness (Koes et al., 2007). Most individuals with acute sciatica have a fair prognosis, but 20% to 30% continue to suffer symptoms a year or two later. The physical examination and the patient's medical history are used to make the diagnosis. And only patients with "red flag" illnesses or those contemplating disc surgery should get imaging, according to experts. Aside from interfering with daily activities and productivity, symptoms might be upsetting. Controlling pain and maintaining function while the compression and/or inflammation subside is the main goal of treatment. The first 6 to 8 weeks of treatment should be conducted cautiously, according to consensus. Disc surgery, however, might provide faster pain relief for the legs than nonsurgical remedies, but after a year or two, there is little to no change seen. Active therapies have taken the place of the formerly passive ones (bed rest) (Jensen et al., 2019; Koes et al., 2007). In addition, a study has been done on medicinal ozone, an ozone and oxygen mixture that has many medical uses. The first-time ozone was used clinically was to alleviate lumbar sciatic pain peridurally. Due to its simplicity and noninvasiveness, ozone therapy makes it possible to treat lumbar sciatic pain effectively on an outpatient basis. Ozone therapy can be thought of as the preferable technique of treatment for lumbar sciatica and a feasible alternative to surgery in many circumstances because it has no major side effects and produces excellent results when compared to other methods (D'Erme et al., 1998).

We believe that residents of the Hail region regularly develop sciatica despite the fact that there is a paucity of data on the condition. However, a recent study was conducted to assess adult awareness and behavior regarding sciatica and treatment choices in the country of Saudi Arabia. The study indicated that while the adult population's attitude about sciatica was sufficient, the information was lacking. It has been demonstrated that adults with pre-existing diseases who reside in cities have better attitudes and knowledge (Hashem et al., 2022). Another Saudi Arabian study that was conducted in 2016 looked into Saudi patients' understanding of back pain and spinal problems. The majority of patients with lower back discomfort had little knowledge of their

illness, per the study (Awwad et al., 2017). In light of this, the primary goal of this study was to assess how well-informed and how sciatica-related attitudes were prevalent among Hail populations. Estimating the frequency of sciatica among the Hail populations in Saudi Arabia and identifying and recognizing widespread misconceptions regarding the disease were our secondary goals.

5. CONCLUSION

There is high prevalence of sciatica among Hail region in Saudi population. It was less common than that reported from industrialized countries. The reported associated factors and socio-medical consequences were similar to some parts of the world.

Recommendations

Based on our study results, the high prevalence of sciatica among hail population, which is affecting their routine work, by missing out working days and eventually affecting the hospital, cost effectiveness system as a whole should be considered. So, an appropriate exercise program has to be adopted so as to alleviate pain and suffering among groups like in schools, hospitals and other work areas. The ministry of education of Saudi Arabia could incorporate these programs into the curriculum of the school and university students.

Author contributions

FFA, RF, SH and RA wrote first draft of the manuscript. TEH, TNA, ESA, ZFK and RA collected data and literature. FFA, FK and TEH reviewed the manuscript. FK contributed in literature search and finalized the manuscript. All authors read and approved the final version of the manuscript.

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Informed consent

Written & Oral informed consent was obtained from the participant identified in this study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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