Medical Science

25(110), April, 2021

A cross sectional study to assess the awareness regarding spinal disc herniation among Hail population, KSA

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To Cite:
Alreshidi FF, Alshammari NM, Alshammari AG, Alshammari HH. A cross sectional study to assess the awareness regarding spinal disc herniation among Hail population, KSA. *Medical Science*, 2021, 25(110), 751-759

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Peer-Review History
Received: 22 February 2021
Reviewed & Revised: 23/February/2021 to 20/March/2021
Accepted: 20 March 2021
Published: April 2021

Peer-review Method
External peer-review was done through double-blind method.

ABSTRACT

Background: Spinal disc herniation is a condition that arises as a result of high pressure on the disc, trauma, and obesity leading to dislocation of disc material outside the intervertebral disc space. That can lead to multiple healths serious problems. *Methods*: A descriptive, cross-sectional study was conducted through an electronic questionnaire. It was distributed through social media apps to the general population of Hail City. The data were collected between November and December 2020. The online questionnaire was obtained and valid from previous study. *Results*: 411 people participate in the study majority were female 72.5% and 27.5% male, 94.2% out of them were Saudi. Most of them were young, 48.4% aged between 18 and 29 years old. The level of knowledge among participants was moderate (4.39±1.50). *Conclusion*: The majority of the participants demonstrated insufficient knowledge regarding a majority of the study aspects, thus the need to increase awareness level by providing the scientific material for the general population.

Keywords: disc herniation, awareness, knowledge, risk factor.

1. INTRODUCTION

Spinal disorders allegedly involved a broad and heterogeneous range of diseases adversely affecting the vertebrae, facet joints, tendons, ligaments, intervertebral discs, muscles, spinal cord, and spinal nerve roots (Elfering & Mannion, 2008). A pad of fibrocartilage is coupling the intervertebral disc to the vertebral bodies (Jordan et al., 2009; Alshehri et al., 2019). The subject of the intervertebral disc is very critical in terms of operation, bodyweight load transfer, and so on the curving, flexion, and contortion of the spine is caused by muscle contractions in the spinal columns (Alshehri et al., 2019). People between the ages of 30 and 50 had the highest incidence of the disease with a 2:1 male-to-female ratio. Additionally, herniated discs are the most common

type of herniated disc. Lower lumbar spine (L4/5 and L6/7) sciatic pain and frailness when elevating the bid toe and maybe the ankle results from the involvement of the 4th and 5th lumbar vertebra. Also, when (L5/S1) vertebrae are involved; results in sciatica and weakness if the patient is standing on the toe. In people aged between 25–55 years (Alshehri et al., 2019). The disc herniation at the cervical level is frequently involving the level of C5-C6 and C6-C7. Most of the known risk factors generally are linked with smoking, gender, overweight, and aging is a contributor to herniation. Occupational status is also a risk factor and they observed an evident relationship between psychological strain and the occurrence of lumbar disc herniation. Also, heavy loads handling, postural factors, and whole-body vibration. Additionally, chemical and mechanical degenerative changes are mostly related to cervical disc herniation (Alshami, 2015; Lestini & Wiesel, 1991; Kim et al., 2018; Heliövaara et al., 1987; Murshid et al., 2020; Hammer et al., 2015). A disc herniation will result in the patient expressing back pain, paresthesia, muscle weakness, sensory loss, radiculopathy with provocative testing of the lower limbs, localized tenderness, and reduction in the range of motion Sabnis & Diwan, 2014; Kido et al., 2016; Akca Nezih et al., 2014; Kim et al., 2018).

A herniated disc can be diagnosed properly by implementing several radiological imaging techniques with MRI as the gold standard imaging modality to confirm the presence of lumbar disc herniation. However, it's not indicated for all patients (Amin Raj et al., 2017; Kim et al., 1993; Kreiner et al., 2014). Diverse approaches are universally employed for managing the patients as for the asymptomatic patient the non-operative treatment is the effective treatment of choice. Conservative therapy found to be promptly relieving the pain in more than 70% of the patients, which traditionally comprises physiotherapy; however, the treatment of choice remains the surgical approach with its superior benefits in the longer term (Sabnisși Diwan 2014; Awad & Moskovich, 2006).

2. METHODOLOGY

A descriptive, cross-sectional study was conducted using an electronic questionnaire, which had been distributed through multiple social media apps to assess the level of awareness of disc herniation among the general population of Hail City. The data collected was between November and December 2020. The questionnaire has been distributed in Arabic and was taken and validated from the previous study in Taif City (Sahrah et al., 2016). The questionnaire consisted of three sections. In the first section sociodemographic data were obtained which included sex, nationality, age, educational level, occupation, and marital status for the general public. The second section involved questions concerning knowledge and awareness about symptoms, prevention, diagnosis, and treatment of disc herniation. The third section involved questions regarding knowledge about the risk factors of disc herniation. The consent of participants was obtained at the beginning of the questionnaire. Data were analyzed using SPSS version 23.0. Chi-square was conducted to test the pattern of knowledge of spinal disc herniation and its association with the occupation. A *p-value* less than 0.05 were considered statistically significant.

3. RESULTS

Table 1 shows the sociodemographic data of the participants. Table 2 shows 75.9% knew what is disc Herniation, and 51.3% know risk factors, however, only 12.4% had disc Herniation, and only 27.7% knew how to deal with it, and 38.4% knew how to prevent themself from it 14.8% reported that the analgesics can be used always to manage the symptoms. 39.4% counted that there a history of disc herniation in their family with mostly 1-3 cases. 76.4% recorded that it can be treated, however, only 35.9% recorded that surgical therapy is the best type of treatment, regardless 52.8% recorded that Physiotherapy is the best type of treatment. Figure 1 shows the participants awareness regards the disc herniation.

Table 1 Demographic characteristics (N=411)

Factor	Group	*N*	%
Gender	Female	298	72.5
	Male	113	27.5
Nationality	Saudi	387	94.2
	Non-Saudi	24	5.8
Martial statue	Divorced	9	2.2
	Married	228	55.5
	Single	174	42.3
Age	18-29	199	48.4

	30-39	75	18.2
	40-49	92	22.4
	50 or more	45	10.9
Education	Primary school	6	1.5
	Middle School	7	1.7
	Secondary School	81	19.7
	University and above	317	77.1
Occupation	Employee	186	45.3
	Not Employee	66	16.1
	Student	159	38.7
Experience	1-5 Years	56	21.46
	6-10 Years	43	16.48
	11-15 Years	36	13.79
	16-20 Years	33	12.64
	+20	93	35.63

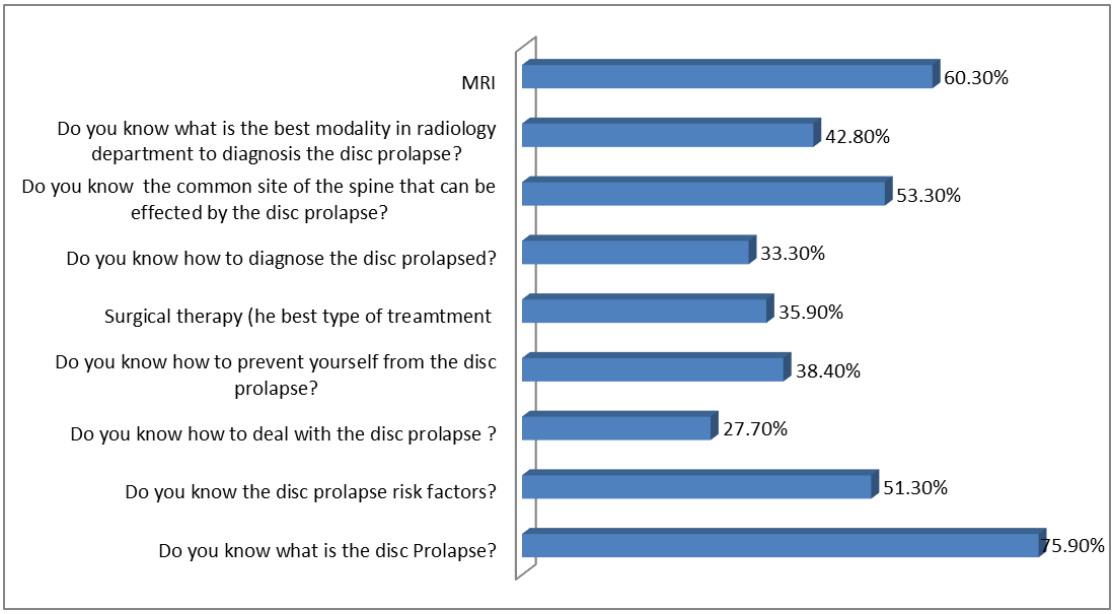

Figure 1 shows the participants awareness regards the disc herniation.

The above figures might due to the short experiences; only 7.8% reported that they visited an awareness activity about disc herniation.

Table 2 awareness regarding knowledge of spinal disc herniation (N=559)

Statement		N	%	*p*
Do you know what is the disc Herniation?	Yes **	312	75.9	<0.001*
	No	74	18.0	
	IDK	25	6.1	
Do you have disc Herniation?	Yes	51	12.4	<0.001*
	No	311	75.7	
	IDK	49	11.9	

Do you know the disc herniation risk factors?	Yes **	211	51.3	<0.001*
	No	140	34.1	
	IDK	60	14.6	
Do you know how to deal with the disc herniation?	Yes **	114	27.7	<0.001*
	No	229	55.7	
	IDK	68	16.5	
Do you know how to prevent yourself from the disc herniation?	Yes **	158	38.4	<0.001*
	No	194	47.2	
	IDK	59	14.4	
Do you think the analgesics can be used always to manage the disc herniation symptoms?	Yes	61	14.8	<0.001*
	No	273	66.4	
	IDK	77	18.7	
Is there any history of the disc herniation in your family?	Yes	162	39.4	<0.001*
	No	203	49.4	
	IDK	46	11.2	
If yes, How many cases?	1-3	179	90.40	<0.001*
	5-7	15	7.58	
	7-10	4	2.02	
Do you think the disc herniation can be treated?	Yes	314	76.4	<0.001*
	No	25	6.1	
	IDK	72	17.5	
What is the best type of treatment?	Physiotherapy	225	52.8%	0.054(NS)
	Surgical therapy**	153	35.9%	<0.001*
	Pharmacotherapy	39	9.2%	<0.001*
	Alternative medicine	9	2.1%	<0.001*
Have you ever visited an awareness activity about disc herniation?	Yes	32	7.8	<0.001*
	No	379	92.2	
*<0.05, Not significant(NS) ** correct answer				

Table 3 shows more than 90% agreed that bad habits, poor diagnosis, and lack of knowledge will increase the risk of developing disc herniation 82.5% believed that regular exercise will prevent disc herniation 78.8% recorded knowing what is the correct way to bake up something from the floor. 81.5% believed that increasing age will result in disc herniation, and obesity is one of the causes. However, 57.4% did not know what the symptoms are, and 66.7% did not know how to diagnose the disc herniation, also 53.3% insignificantly know the common site of the spine that can be affected. Although 57.2% did not know what is the best modality in the radiology department to diagnosis, 60.3% recorded that MRI is the best method.

Table 3 The awareness regarding risk factor and diagnostic method of spinal disc herniation

Statement	Category	N	%	*p*
Do you think the bad habits will increase the risk factor of the disc herniation?	Yes	394	95.9	<0.001*
	No	17	4.1	
Do you think the loss of knowledge will increase the risk factor of the disc herniation?	Yes	382	92.9	<0.001*
	No	29	7.1	
Do you think the bad diagnosis of the disc herniation one of the reason for sever disc herniation?	Yes	378	92.0	<0.001*
	No	33	8.0	
Do you think the regular exercise will prevent you from the disc herniation?	Yes	339	82.5	<0.001*
	No	72	17.5	
Do you know what is the correct way to bake up something from the floor?	Yes	324	78.8	<0.001*
	No	87	21.2	
Do you think increase age will produce disc herniation?	Yes	335	81.5	<0.001*
	No	76	18.5	
Do you think the obesity is one of causes of the disc herniation?	Yes	318	77.4	<0.001*
	No	93	22.6	
Do you know what the symptoms of the disc herniation are?	Yes	175	42.6	0.003*
	No	236	57.4	
Do you know how to diagnose the disc herniationd?	Yes**	137	33.3	<0.001*
	No	274	66.7	
Do you know the common site of the spine that can be affected by the disc herniation?	Yes**	219	53.3	0.183(NS)
	No	192	46.7	
Do you think the disc herniation more common in Hail city?	Yes	228	55.5	0.026*
	No	183	44.5	
Do you know what is the best modality in radiology department to diagnosis the disc herniation?	Yes**	176	42.8	0.004*
	No	235	57.2	
If yes, what is it?	CT scan	51	25	<0.001*
	MRI**	123	60.3	
	Ultra Sound - US	4	2	
	X ray	26	12.7	
**<0.05, Not significant(NS)*				
*** correct answer*				
Level of knowledge (Mean±SD/level)		*4.39±1.50/moderate*		

As shown in Table 4, attitude was measured by 9 items, the items were answered by "Yes" and "No", and the statements were dichotomized/classified into "Correct" and "Wrong", which is signed by "two" stars in the table (IV), so the possible score ranged between zero (the less relevant to knowledge) and 9 (the most relevant to knowledge). The level of knowledge among students was

moderate (4.39±1.50). As shown in Table 4, chi-square was conducted to test the association between occupations and the pattern of spinal disc herniation. For most statements employees were more aware of the pattern of spinal disc herniation than the other participants.

Table 4 the association between occupations and of spinal disc herniation

Statement	Category	employee	Not employee	Student	*p*
Do you know what is the disc Herniation?	Yes	83.9%	69.7%	69.2%	0.003*
	No	10.2%	21.2%	25.8%	
	IDK	5.9%	9.1%	5.0%	
Do you have disc Herniation?	Yes	20.4%	10.6%	3.8%	<0.001*
	No	69.9%	75.8%	82.4%	
	IDK	9.7%	13.6%	13.8%	
Do you know the disc herniation risk factors?	Yes	63.4%	50.0%	37.7%	<0.001*
	No	24.2%	36.4%	44.7%	
	IDK	12.4%	13.6%	17.6%	
Do you know how to deal with the disc herniation?	Yes	38.2%	25.8%	16.4%	<0.001*
	No	45.2%	57.6%	67.3%	
	IDK	16.7%	16.7%	16.4%	
Do you know how to prevent yourself from the disc herniation?	Yes	45.7%	40.9%	28.9%	<0.001*
	No	40.3%	45.5%	56.0%	
	IDK	14.0%	13.6%	15.1%	
Do you think the analgesics can be used always to manage the disc herniation symptoms?	Yes	18.3%	15.2%	10.7%	0.07(NS)
	No	67.7%	66.7%	64.8%	
	IDK	14.0%	18.2%	24.5%	
Is there any history of the disc herniation in your family?	Yes	45.2%	50.0%	28.3%	0.001*
	No	47.8%	34.8%	57.2%	
	IDK	7.0%	15.2%	14.5%	
If yes, How many cases?	1-3	92.4%	83.3%	92.2%	0.46(NS)
	5-7	5.4%	14.3%	6.3%	
	7-10	2.2%	2.4%	1.6%	
Do you think the disc herniation can be treated?	Yes	73.7%	72.7%	81.1%	0.11(NS)
	No	9.1%	4.5%	3.1%	
	IDK	17.2%	22.7%	15.7%	
What is the best type of treatment?	Physiotherapy	51.1%	51.5%	60.4%	0.19(NS)
	Surgical therapy	34.9%	31.8%	42.1%	0.24(NS)
	Pharmacotherapy	9.7%	7.6%	10.1%	0.84(NS)
	Alternative medicine	0.5%	7.6%	1.9%	0.003*
Have you ever visited an awareness activity about disc herniation?	Yes	9.1%	4.5%	7.5%	0.48(NS)
	No	90.9%	95.5%	92.5%	

Do you think the bad habits will increase the risk factor of the disc herniation?	Yes	98.4%	95.5%	93.1%	0.047*
	No	1.6%	4.5%	6.9%	
Do you think the loss of knowledge will increase the risk factor of the disc herniation?	Yes	95.7%	95.5%	88.7%	0.027*
	No	4.3%	4.5%	11.3%	
Do you think the bad diagnosis of the disc herniation one of the reason for sever disc herniation?	Yes	96.2%	83.3%	90.6%	0.003*
	No	3.8%	16.7%	9.4%	
Do you think the regular exercise will prevent you from the disc herniation?	Yes	82.3%	69.7%	88.1%	0.004*
	No	17.7%	30.3%	11.9%	
Do you know what is the correct way to bake up something from the floor?	Yes	76.3%	74.2%	83.6%	0.16(NS)
	No	23.7%	25.8%	16.4%	
Do you think increase age will produce disc herniation?	Yes	83.3%	71.2%	83.6%	0.06(NS)
	No	16.7%	28.8%	16.4%	
Do you think the obesity is one of causes of the disc herniation?	Yes	78.5%	65.2%	81.1%	0.03*
	No	21.5%	34.8%	18.9%	
Do you know what the symptoms of the disc herniation are?	Yes	52.7%	40.9%	31.4%	<0.001*
	No	47.3%	59.1%	68.6%	
Do you know how to diagnose the disc herniationd?	Yes	38.2%	30.3%	28.9%	0.16(NS)
	No	61.8%	69.7%	71.1%	
Do you know the common site of the spine that can be effected by the disc herniation?	Yes	57.5%	60.6%	45.3%	0.032*
	No	42.5%	39.4%	54.7%	
Do you think the disc herniation more common in Hail city?	Yes	61.3%	47.0%	52.2%	0.08(NS)
	No	38.7%	53.0%	47.8%	
Do you know what is the best modality in radiology department to diagnosis the disc herniation?	Yes	54.8%	31.8%	33.3%	<0.001*
	No	45.2%	68.2%	66.7%	
If yes, what is it?	CT scan	20.18%	40.0%	26.15%	<0.001*
	MRI	71.56%	60.0%	41.54%	
	Ultra Sound -US	1.83%	0.00	3.08%	
	X ray	6.42%	0.00	29.23%	
**<0.05, Not significant(NS)*					

4. DISCUSSION

In developed countries, disc herniation is the most frequent form of injury (Sahrah et al., 2016). Our aim in the present study was to analyze the knowledge and awareness among people in Hail City, Saudi Arabia. It was found that employees show more

awareness of the pattern of spinal disc herniation than those who were not employees and students in our study. The majority of participants had heard about disc herniation, but generally, the sampling was not highly aware of preventive steps and symptoms of spinal disc herniation and only 12.4% of the participants had disc herniation and the majority of them were employees. More than half of the participants had good knowledge in many aspects, such as awareness of risk factors, the most frequent location of the disease-affected spine, the standard gold imaging procedure for diagnosing the disease, and whether the disease is curable or not. Although, only a few of them recorded that Surgical therapy is the best type of treatment. Our study findings were similar to previous studies which took place in Taif, Asser, and Jeddah where most of the participants thought that the bad habits and the lack of knowledge would increase the risk of disc herniation. Furthermore, they thought that increasing age and obesity are leading to disc herniation and a bad diagnosis of disc herniation is one of the causes that make the disc herniation more severe.

Our study was consistent with the previous in most of the aspects participants do not know how to deal with the disc herniation and prevent themselves from disc herniation, however, they believed that regular exercise would prevent them from a disc herniation and they recorded knowing what was the proper way to bake up something from the floor. Additionally, most of the participants did not visit any awareness activity about disc herniation (Sahrah et al., 2016; Alshehri et al., 2019; Alamri et al., 2020). Some of the findings in previous studies conducted in Taif and Asser were inconsistent with our study. They recorded most of the participants did not recognize the best modality in the radiology department to diagnosis the disc herniation, whilst more than half of the participants in our study recorded that MRI is the best method (Sahrah et al., 2016; Alshehri et al., 2019).

5. CONCLUSION

This study aimed to determine the level of awareness of spinal disc herniation in the Hail population. According to the data collected and analyzed the awareness level was moderate in all aspects. Hence the need to increase that level, either through providing scientific information in clinics and primary health centers or through implementing awareness campaigns.

Informed consent

Informed consent was obtained from all participants included in the study.

Ethical Consideration

The study acquired the ethical approval from the ethical committee at the College of Medicine, University of Hail (letter number Nr. 20455/5/42- project number H-2020-218).

Acknowledgement

We would like to thank Prof AmaniKhalifa for her contribution in proof reading.

Author Contributions

All the authors contributed evenly with regards to data collecting, analysis, drafting and proofreading the final draft.

Funding

This study has not received any external funding

Conflict of Interest

There are no conflicts of interest.

Data and materials availability

All data associated with this study are present in the paper.

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