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Public awareness towards disk herniation in Ha'il region, Saudi Arabia: A cross-sectional study

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ABSTRACT

Introduction: Disc herniation is quite common condition with an incidence that ranges between 40 to 50 per 100,000 people. *Material & methods*: A cross sectional study aimed to measure the level of awareness by online questionnaire about Disc herniation among Hail community. The questionnaire hosted by Google form, and distributed between July - August 2020. *Results*: A total of 519 participants have completed the survey. The studied population age range between 15 and 76 years old with a mean age of 31.08±1.08. However, regarding disc herniation awareness, 67.1% knew what disc herniation is, while only 6.7% have visited an awareness activity about disc herniation. *Conclusion*: The study revealed that there is good awareness only in half of the population in Ha'il region, Saudi Arabia. Ha'il community without a doubt needs comprehensive awareness campaigns.

Keywords: Disk, Awareness, Vertebrae, Herniation, Ha'il, Saudi Arabia.

1. INTRODUCTION

Disc herniation is defined as a ''Slipping of disc material between vertebrae outside its limits'' (Fardon and Milette, 2001). The main functions of the intervertebral disc are mechanical, transferring load coming from the body weight, and muscle actions by spinal column that grant bending, flexion, and contortion (Adams and Roughley, 2006). The major cause of disability in developing countries is Prolapsed Intervertebral Disc (PID) (Sahrah et al., 2016). Disc herniation is a quite common condition with an incidence that ranges between 40 to 50 per 100,000 people (Quint et al., 2012). The prevalence has shown that the people at highest risk of disc herniation aged between 30 and 50 years, with male susceptibility more than the female by the ratio of 2:1 (Jordon et al., 2009). Chronic or abrupt forcible hyperflexion or contortion can cause disc herniation. But generally, there are no specific inciting incidents. Additional possible causes can be smoking, obesity, and occupational risks such as poor posture, driving for a long time, and whiplash (Suri et al., 2010). Disc herniations are often asymptomatic, and spontaneous recovery within 6 months occurs in 75% of intervertebral disc herniations (Shahbandar and

Press, 2005). Herniated disc patient can present with backpain along with paresthesia, sensory loss, or muscle weakness. Reduction in the range of motion, localized tenderness, and radiculopathy with provocative testing of the lower limbs are physical findings noted in herniated disc patients (Akca et al., 2014; Kido et al., 2016; Sabnis and Diwan, 2014). Most cases 70% of disc prolapse usually relieved by conservative therapy which includes physiotherapy. However, the treatment of choice is the surgical method, which provides better long-term benefits (Kiraz & Kiraz, 2020; Ahmed et al., 2019; Akca et al., 2014; Kido et al., 2016; Sabnis and Diwan, 2014).

In Saudi Arabia, a few studies were done regarding disc herniation awareness. A study was done in Taif in 2016 including 1034 participants to assess the level of awareness about disc prolapse among people in Taif. Although the study revealed good knowledge about the disease itself, participants had a lack of knowledge about preventive methods and risk factors of disc herniation (Sahrah et al., 2016). A similar study was conducted in Aseer province in March 2019 involving 1044 participants with similar objectives. The study showed a lack of awareness regarding all the aspects of disc herniation (Alshehri et al., 2019). Also, another study was done in Jeddah in June 2020 involving 1026 participants to measure the level of awareness about disc herniation among the general population and medical students in Jeddah.

The study revealed that there are poor awareness in some aspects such as knowledge about the preventive measures, symptoms of the disease, the most common site in the spine affected by the disease, and the gold diagnostic standard imaging method for this disease (Alamri et al., 2020). No previous studies were done in Hail region; therefore, the aim of this study was to assess the level of awareness about disc herniation among the general population in Hail region, Saudi Arabia.

2. MATERIALS AND METHODS

A cross-sectional study aims to assess the awareness of community of the Hail city towards spinal injuries. The level of awareness will be measured through a questionnaire formed by two parts. The first part consists of 7 elements to identify demographic data, and the second part consists of 19 questions to determine the level of awareness. The questionnaire will be distributed by Google form according to application of the principle of social separation. The expected period for distributing the questionnaire is from October to November 2020.

Ethical consent

The aim of the study has been explained to the volunteers and the consent to participate was received before answering the questionnaire. Ethical approval was obtained from the Research Ethics Committee at the University of Ha'il, Ha'il city, Saudi Arabia. Ethical Approval Code: Nr. 16784/5/42.

Statistical analysis

Out of all Hail region 716021 residents, (General Authority for Statistics, 2018), almost 384 participants should be sampled so that 95% the confidence level and 5% margin of errors are accomplished, according to the Raosoft online sample calculator. The data was analyzed by using (SPSS version 23). Chi-square analysis was performed to evaluate the correlation between awareness, knowledge and with demographic data of the participants, and the p-value has been less than 0.05 and was considered the cutoff value for significance.

3. RESULTS

A total of 519 participants have completed the survey. The studied population age range between 15 and 76 years old with a mean age of 31.08±10.8. The majority of the participants were Saudi nationalist, and most were females. More than three-quarters (77.3%) of the studied population had a university degree or higher while only 1.9% had a primary school degree as their highest degree. More than half (51.4%) of the studied population were married and 4.6% were divorced. More data are shown are shown in *Table 1*.

Table 1 Personal data of the study participants, Hail region, Saudi Arabia

Personal data		Frequency (n) (519)	Percentage
Age (year)	15-29	274	52.8
	30-39	127	24.5
	40-49	79	15.2
	≥50	39	7.5

Gender	Male	140	27
	Female	379	73
Nationality	Saudi	513	98.8
	Non-Saudi	6	1.2
Education level	Primary	10	1.9
	Intermediate	15	2.9
	Secondary	93	17.9
	University and above	401	77.3
Marital status	Single	228	43.9
	Married	267	51.4
	Divorced	24	4.6
Occupation	Student	173	33.3
	Employee	177	34.1
	Non-employee	169	32.6
Family history of disc herniation	Yes	182	35.1
	No	247	47.6
	I don't know	90	17.3

Awareness of Disc Herniation

Regarding disc herniation awareness, 67.1% knew what disc herniation is, 25.6% knew how to deal with disc herniation, 50.3% thought analgesics can be used always to manage the disc herniation symptoms, while only 6.7% have visited an awareness activity about disc herniation. When it comes to the disc herniation risk factors the most identified was bad habits (81.7%), followed by lack of knowledge (78.8%), while the least identified was old age (58.8%).

When asked about the diagnostic modality, 153 participants have recognized MRI as the best diagnostic modality. In regard to the preventive measures, 63.8% knew the correct way to pick up something from floor, followed by 60.1% knew that regular exercise can prevent disc herniation, finally 32.9% knew how to prevent themselves from disc herniation. More data are shown in Table 2 and figure 1.

Table 2 Awareness data about disc herniation among the population in Hail region, Saudi Arabia.

Awareness items	No.	Percentage
General awareness items		
Know what is disc herniation	348	67.1
Knows the disc herniation risk factors	215	41.4
Visited an awareness activity about disc herniation	35	6.7
know how to deal with the disc herniation	133	25.6
Thinks that analgesics can be used always to manage the disc herniation symptoms	261	50.3
Risk factors of disc herniation		
Bad habits will increase the risk of disc herniation	424	81.7
Lack of knowledge will increase the risk of disc herniation	409	78.8
Bad diagnosis of disc herniation is one of the causes for severe disc herniation	397	76.5
Old age increases the risk for disc herniation	305	58.8
Obesity is one of the causes of disc herniation	307	59.2
Diagnosis methods		
Know what is the best modality in radiology for diagnosis of disc herniation	215	41.4

MRI is the best radiological modality of disc herniation	153	29.5
Preventive measures of disc herniation		
Know how to prevent yourself from disc herniation	171	32.9
Regular exercise will prevent you from disc herniation	312	60.1
Know the correct way to pick up something from floor	331	63.8

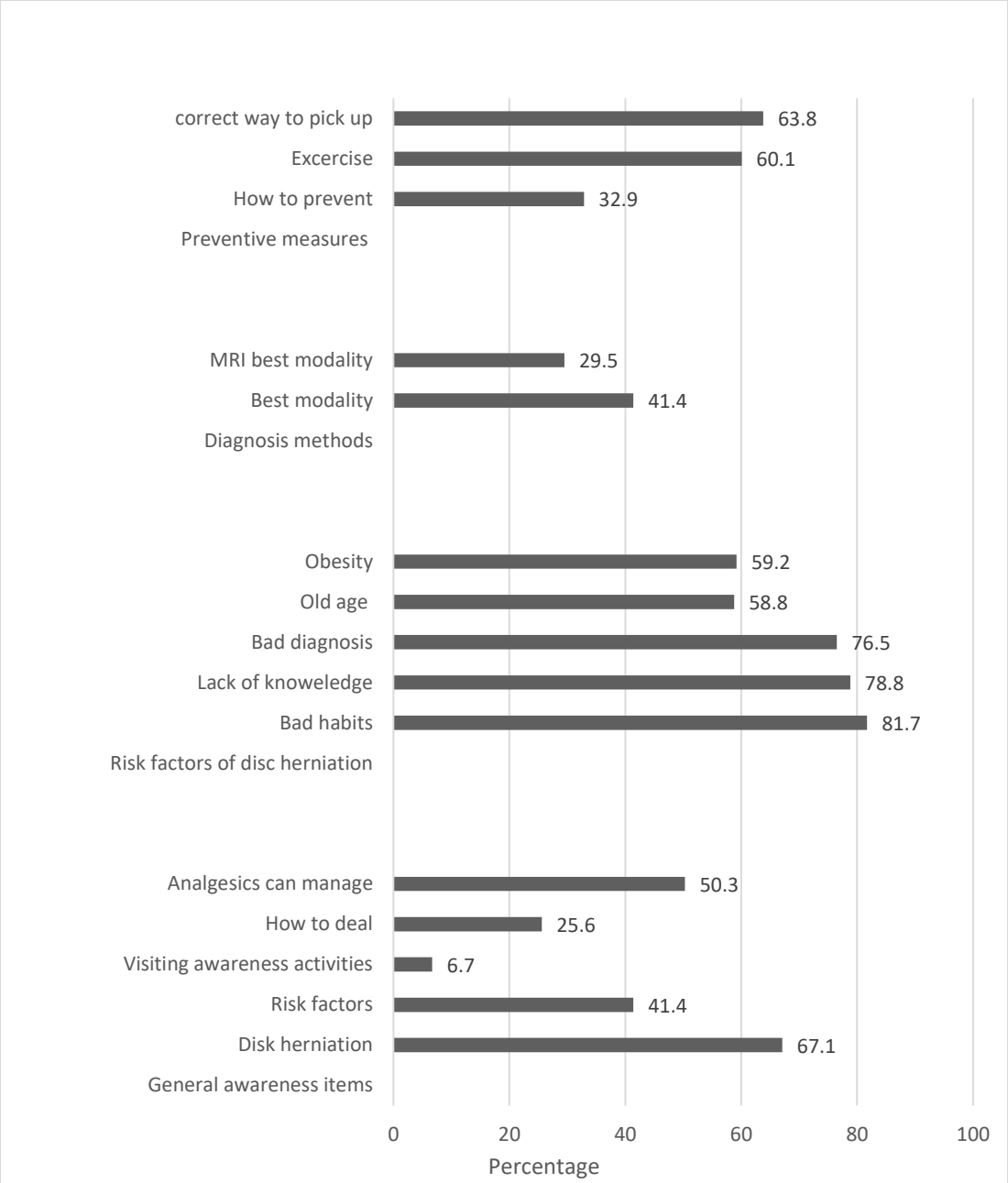

Figure 1 Awareness about general items, risk factors, diagnostic methods and preventive measures of disk herniation.

On relating levels of awareness to characteristics of the participants, 69.2% of those who aged 50 years or older had a good awareness compared to 39.1% of those aged between 15 and 29 years old ($p<0.001$). Fifty-nine-point three percent of the males had a good awareness slightly higher than the females who only 49.1% of them had a good awareness ($p=0.039$). Sixty-point seven percent of those who are married had a good awareness, while only 29.2% of those who are divorced had a good awareness. There is a

significant relationship between occupation and overall awareness (p<0.001), 67.8% of the employees had a good awareness compared to only 38.2% of the students. About three-quarters of those with a family history of disc herniation had a good knowledge. More data are shown in Table 3 and figure 2.

Table 3 Distribution of the studied sample according to the awareness score among the studied sample

Personal data		Overall awareness				*P*
		Poor		Good		
		No.	Percentage	No.	Percentage	
Age (year)	15-29	167	60.9	107	39.1	<0.001
	30-39	46	36.2	81	63.8	
	40-49	25	31.6	54	68.4	
	≥50	12	30.8	27	69.2	
Gender	Male	57	40.7	83	59.3	0.039
	Female	193	50.9	186	49.1	
Nationality	Saudi	248	48.3	265	51.7	0.464
	Non-Saudi	2	33.3	4	66.7	
Education level	Primary	5	50	5	50	0.888
	Intermediate	6	40	9	60	
	Secondary	47	50.5	46	49.5	
	University and above	192	47.9	209	52.1	
Marital Status	Single	128	56.1	100	43.9	<0.001
	Married	105	39.3	162	60.7	
	Divorced	17	70.8	7	29.2	
Occupation	Student	107	61.8	66	38.2	<0.001
	Employee	57	32.2	120	67.8	
	Non-employee	86	50.9	83	49.1	
Family history of disc herniation	Yes	50	27.5	132	72.5	<0.001
	No	144	58.3	103	41.7	
	I do not know	56	62.2	34	37.8	

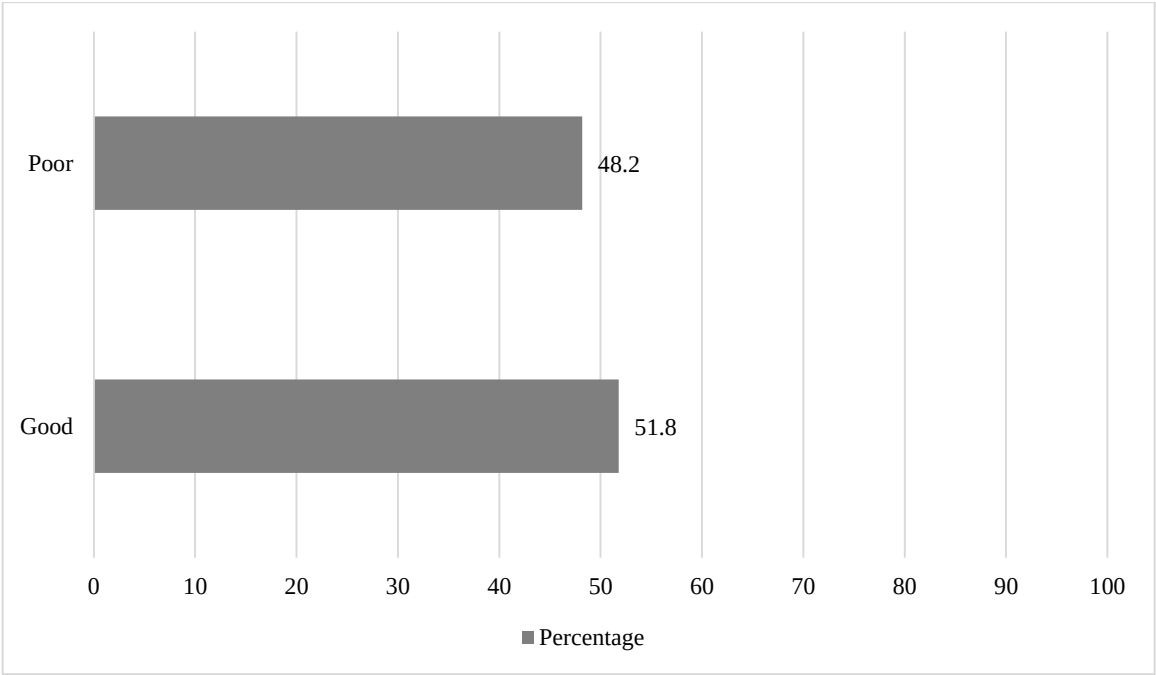

Figure 2 Overall awareness about disc herniation among the general population in Hail region, Saudi Arabia

4. DISCUSSION

According to our knowledge, this is the first cross-sectional study that has been conducted to measure the level of awareness regarding Disc Herniation among the citizens of Hail. Young population between 15-29 years old had poor knowledge with an overall awareness of 39%. While older population aged above 30 years had a better awareness with more than 60%. About 67% of Non-Saudi population registered good level of awareness, whereas 51.7% of Saudis had a good level of awareness. It was found that only half of the population had a good knowledge about the disease. Particularly in aspects such as: whether bad habits and lack of knowledge will increase the risk of disc herniation or not, and the correct way to pick up an object from the floor. However, less than half of the population thought that MRI is the best imaging radiological modality.

A previous study was conducted in Jeddah with similar findings to ours in Hail. Almost all participants in both studies knew that bad habits and lack of knowledge will increase risk of the disease. Moreover, less than quarter of the participants in our study knew how to deal with disc herniation, and only 6.7% have visited an awareness activity about DH. Also, most of the population believes that bad diagnosis of DH is one of the causes for severe disc herniation, and more than half of the participants think that obesity and increased age will lead to higher risk of disc herniation (Alamri et al., 2020).

Another similar study was conducted in Taif, which is consistent with our study in some aspects. In both studies most of the participants didn't know what the best radiological modality is. Regarding the prevention of disc herniation, both studies showed poor knowledge on dealing with DH (Sahrah et al., 2016). In the present study, we noted a poor overall awareness in the following studied samples: participants with age less than 29 years, female participants recorded 10% less than male, and 61.8% of students registered poor level of awareness.

5. CONCLUSION

The results of this study show a fairly good level of awareness and slightly quiet good level of knowledge in the Hail region, Without a doubt, Hail community needs an increase in education about disk herniation especially in young population, and measures must be taken to raise the level of knowledge about symptoms, causes, and treatment of disk herniation to help eliminate misconception from the society.

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Author Contributions

All the authors listed above have participated equally in collecting the data, analyzing the data, writing the manuscript, and reviewing the article.

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Conflict of Interest

The authors declare that there are no conflicts of interests.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

The study was approved by the Research Ethics Committee at the University of Ha'il, Ha'il, Saudi Arabia (Ethical Approval Code: Nr.16784/5/42).

Data and materials availability

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

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