

# Awareness of disc herniation among general population in Aseer province, Saudi Arabia

Abdullah Khalid Alshehri<sup>1</sup>, Turki Khalid Alshehri<sup>1</sup>, Sultan Abdulrahman Alyali<sup>1</sup>,  
Abdulrahman Abdulelah Alshahrani<sup>1</sup>, Shaker H. Alshehri<sup>2</sup>

<sup>1</sup>College of Medicine, King Khalid University, <sup>2</sup>Department of Surgery, College of Medicine, King Khalid University, Abha, Saudi Arabia

## ABSTRACT

**Background:** Herniated lumbar disc is a depositions of discs material (nucleus pulposus and annulus fibrosus) behind the intervertebral disk. Intervertebral disc connected the vertebral bodies together by pad of fibrocartilage. The major functions of intervertebral disc are mechanical, transferring load coming from the body weight and muscle contractions by spinal columns and letting the curving, flexion, and contortion. **Aim:** To assess the awareness of general population in Aseer region, southern of Saudi Arabia, regarding disc herniation and to identify the predictors for their awareness. **Methodology:** A descriptive cross-sectional approach was conducted through a questionnaire designed to examine the public herniated disc awareness and knowledge. The questionnaire given to individuals from general population visiting general public places in Aseer region. Content validity for the questionnaire was done as it was reviewed by three experts for any modification of corrections. **Results:** The study included 1,044 participants aged between 15 and 70 years with mean age of  $36.3 \pm 11.2$  years old. The majority of respondents were males (62.4%) and Saudi (98.9%). About 71% of the participants were university graduated. Generally, only 9% of the study participants recorded good awareness level regarding all aspects of disc herniation. **Conclusion:** This study showed that awareness regarding disc herniation among the general population was very poor for all domains.

**Keywords:** Awareness, disc herniation, disc prolapse, knowledge, prevention, risk factors

## Background

Herniated lumbar disc is a depositions of discs material (nucleus pulposus and annulus fibrosus) behind the intervertebral disk. Intervertebral disc connected the vertebral bodies together by pad of fibrocartilage.<sup>[1]</sup> The major functions of intervertebral disc is mechanical, transferring load coming from the body weight, and muscle contractions by spinal columns and letting the curving, flexion, and contortion.<sup>[2]</sup> The prevalence show that the people at highest risk of herniated disk aged between 30 and 50 years and the male susceptible more than the female by ratio of 2:1.<sup>[1]</sup> The most common site of herniated lumbar disc is posterior lateral region. One of the most diagnosed degenerative abnormalities of lumbar spine is herniated disc

and its one of the major causes of spinal surgery. The most common site of herniated disc in lumbar spine is L4-L5 and L5-S1.<sup>[3]</sup> If the herniated disc at lumbar segment (L4-L5) cause sciatic pain and feebleness when elevating the bid toe and may be the ankle, also its recognized as (foot drop), the patient with this type may be feel numbness and pain in the top of foot.<sup>[3]</sup> If the herniated disc at lumbar segment 5 and sacral 1 cause sciatic pain and feebleness if the patient standing in the toe.<sup>[3]</sup> C5-C6 and C6-C7 are the most common sites of cervical disc herniation.<sup>[1]</sup> Degenerative change is the most common cause of cervical disc herniation, but it may be happen due to trauma.<sup>[4]</sup> The type of symptom is different but generally include radicular pain, neck pain, and paresthesia, with gradual development and progression of weakness.<sup>[4]</sup> The occurrence of thoracic disc herniation is uncommon comparing the cervical and lumbar disk

**Address for correspondence:** Dr. Abdullah Khalid Alshehri, College of Medicine, King Khalid University, Abha, Saudi Arabia.  
E-mail: akf.alshehri@gmail.com

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmpc.com

**DOI:**  
10.4103/jfmpc.jfmpc\_462\_18

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Alshehri AK, Alshehri TK, Alyali SA, Alshahrani AA, Alshehri SH. Awareness of disc herniation among general population in Aseer province, Saudi Arabia. J Family Med Prim Care 2019;8:1159-63.

herniation.<sup>[5]</sup> The occurrence of TDH is from 0.25% to 0.75% of all whole symptomatic herniated disc.<sup>[6]</sup> The most often site of thoracic disc herniation is (T11-T12).<sup>[7]</sup> It is often occur with severe myelopathy, which is usually need to surgery.<sup>[8]</sup>

This study aimed to assess the awareness of general population in Aseer region, southern of Saudi Arabia, regarding disc herniation and to identify the predictors for their awareness.

### Methodology

A descriptive cross-sectional approach was conducted through a questionnaire designed to examine the public herniated disc awareness and knowledge. The questionnaire given to individuals from general population visiting general public places in Aseer region (universities, shopping malls, restaurants, schools, residential areas Airport, hospitals, and primary healthcare centers after having oral consent to participate. The data collection period was from May to October 2018. The questionnaire was in Arabic language obtained from previous study which conducted in Taif city.<sup>[2]</sup> In the previous questionnaire, we added two questions about treatment and a question about symptoms of disc herniation. Content validity for the questionnaire was done as it was reviewed by three experts for any modification of corrections. Sections of the questionnaire covered Sociodemographic data; age, gender, occupation, marital status, Nationality, level of education and family history, knowledge and awareness about risk factors, diagnosis, protection, symptoms and treatment of disc herniation.

### Data analysis

After data collection, they were revised, coded, and fed to statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft excel software. All statistical analysis was done using two-tailed tests and alpha error of 0.05. *P* value ≤0.05 was considered to be statistically significant. Each correct answer for awareness item was scored 1 degree, and then all discrete scores for the items were summed together to have an overall awareness score. Then, the score was transferred to score percent by dividing the actual score by the maximum score (23 points) and categorized to poor level of awareness for those who had score percent up to 50% and good for those who had score percent above 50%. Frequency distribution with percentage were used to describe study variables. Chi-square/ Mont Carlo exact test and Fisher’s exact test were used to test for the association between different participants characteristics with their awareness level. Multiple stepwise logistic regression was done to identify the most important predictors for awareness by adjusting all other factors.

### Results

The study included 1,044 participants aged between 15 and 70 years with mean age of 36.3 ± 11.2 years old. The majority of respondents were males (62.4%) and Saudi (98.9%). About 71% of the participants were university graduated and 69.3%

were married. About 14% of the respondents were not working, whereas 5% were at health-related jobs. Family history of disc herniation was recorded among 33.8% of the participants with majority (94.4%) recorded one to three cases in their families [Table 1].

With regard to general population awareness regarding disc herniation [Table 2], 23.1% of the participants know about how to deal with disc herniation and 44.8% know about its possibility of recurrence after treatment. As for risk factor awareness, 89% of the study participants told about lack of knowledge as a risk factor, followed with bad habits (85.6%), obesity (74.6%), and poor diagnosis. Considering diagnostic methods, 34.1% of the participants know about computed tomography as a diagnostic method. Considering symptoms, back pain was recorded by 39.1% of the participants followed with numbness with back pain (18.5%) and numbness only (6.1%), whereas 11% recorded all symptoms. With regard to preventive measures, 73.6% of the participants recorded correct bending of back to lift things, and 67.6% recorded doing physical exercises. Regarding conservative therapy awareness, 23.7% of the respondents selected analgesics, followed with physiotherapy (21.8%), whereas 22.4% selected all measures. Epidural selective injection was recorded among 6.2% of the participants as a second line treatment and selective nerve root injection was recorded by 7.6%.

**Table 1: Personal data of study participants, Aseer, Saudi Arabia**

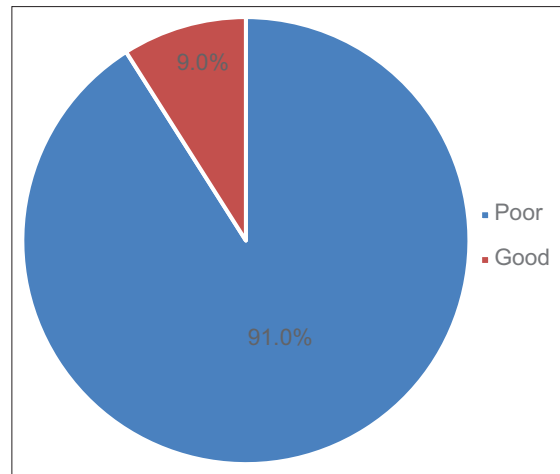
Personal data	No	Percentage	
Age (year)	15-29	317	30.4
	30-39	278	26.6
	40-49	305	29.2
	≥50	144	13.8
Gender	Male	651	62.4
	Female	393	37.6
Nationality	Saudi	1033	98.9
	Non-Saudi	11	1.1
Education level	Primary	26	2.5
	Intermediate	52	5.0
	Secondary	224	21.5
	University and above	740	71.0
Marital status	Married	724	69.3
	Single	299	28.6
	Divorced	21	2.0
Occupation	Student	197	18.9
	Do not work	22	2.1
	Office worker	109	10.4
	Military	154	14.8
	Healthcare worker	53	5.1
	Educational	292	28.0
	House wife	124	11.9
	Other	93	8.9
Family history of disc herniation	Yes	353	33.8
	No	691	66.2
If yes, how many cases	1-3	335	94.9
	4-7	18	5.1

**Table 2: Awareness data regarding disc herniation among the general population in Aseer region, Saudi Arabia**

Awareness items	No	Percentage
<b>General awareness items</b>		
Know how to deal with the disc herniation	241	23.1
Do you think exist recurrence of disc herniation after surgical therapy	468	44.8
Previously visited an awareness activity about disc herniation	47	4.5
<b>Risk factors of disc herniation</b>		
Bad habits will increase the risk factor of the disc herniation	903	86.5
Lack of knowledge will increase the risk factor of the disc herniation	929	89.0
Poor diagnosis one of the reasons for sever disc herniation	703	67.3
Old age increases the risk for disc herniation	489	46.8
Obesity is one of causes of the disc herniation	779	74.6
<b>Diagnosis methods</b>		
Know what is the modality in radiology for diagnosis of the disc herniation	356	64.6
MRI is the best radiological modality of herniation	230	34.1
<b>Symptoms of disc herniation</b>		
Numbness	64	6.1
Radiculopathy	21	2.0
Back pain	407	39.1
Numbness with radiculopathy	5	0.5
Numbness with back pain	193	18.5
Radiculopathy with back pain	52	5.0
All are symptoms	115	11.0
<b>Preventive measures of disc herniation</b>		
Know how to prevent yourself from the disc herniation	349	33.4
Do regular exercise will prevent you from the disc herniation	706	67.6
Know the correct way to bake up something from the floor	768	73.6
<b>Conservative therapy of disc herniation</b>		
Analgesics	247	23.7
Physiotherapy	227	21.8
Weight loss	124	11.9
Medications (NSAID)	18	1.7
All	233	22.4
<b>Second-line treatment</b>		
Epidural selective injection	65	6.2
Selective nerve root injection	79	7.6
Both	25	2.4

Generally, only 9% of the study participants recorded good awareness level regarding all aspects of disc herniation [Figure 1].

On relating awareness level to participants characteristics [Table 3], 12% of those who aged <30 years had good awareness level compared with 6.3% of old aged participants without statistical significance. About 27% of non-Saudi recorded good awareness level compared with 8.8% of Saudi population ( $P < 0.05$ ). Also, 9.6% of university graduated participants had good awareness level compared with 3.8% of those with primary level of education with recorded statistical



**Figure 1: Overall awareness regarding disc herniation among the general population in Aseer region, Saudi Arabia**

significance ( $P = 0.048$ ). As for marital status, 12.7% of single participants had good awareness level compared with 7.7% of those who were married ( $P < 0.05$ ). Also 17% of the participants who joined health-related jobs had good awareness level compared with 7.3% of other jobs ( $P = 0.008$ ). Persons with family history of disc herniation recorded significantly higher level of awareness (12.2% vs. 7.4%).

Multiple logistic regression analysis was done to identify the most significant predictors of awareness level including all participants' characteristics [Table 4]. The model revealed that age, nationality, and family history were the most important predictors adjusting for all other factors. As for age, old age participants recorded 30% less probability of having good awareness than young age group (odds ratio [OR] = 0.7; 95% confidence interval [CI]: 0.6–0.9). Considering nationality, non-Saudi participants had fivefold good awareness compared with non-Saudi (OR = 5.3; 95% CI: 1.3–21.1). Also, participants with family member(s) with disc herniation recorded doubled likelihood for good awareness compared with others with negative family history (OR = 1.9; 95% CI: 1.2–3.0).

## Discussion

Herniated lumbar disc is a displacement of disc material (nucleus pulposus or annulus fibrosus) beyond the intervertebral disc space. The highest prevalence is among people aged 30–50 years, with a male to female ratio of 2:1. There is little evidence to suggest that drug treatments are effective in treating herniated disc.<sup>[9]</sup> The highest prevalence is among people aged 30–50 years, with a male to female ratio of 2:1. In people aged 25–55 years, about 95% of herniated discs occur at the lower lumbar spine (L4/5 and L5/S1 level); disc herniation above this level is more common in people aged over 55 years.<sup>[10]</sup> The natural history of disc herniation is difficult to determine, because most people take some form of treatment for their back pain, and a formal diagnosis is not always made. Clinical improvement is

**Table 3: Distribution of awareness level regarding disc herniation among the general population in Aseer region by their personal data, Saudi Arabia**

Personal data		Overall awareness				P
		Poor		Good		
		No	Percentage	No	Percentage	
Age (year)	15-29	279	88.0	38	12.0	0.132
	30-39	254	91.4	24	8.6	
	40-49	282	92.5	23	7.5	
	50+	135	93.8	9	6.3	
Gender	Male	585	89.9	66	10.1	0.099
	Female	365	92.9	28	7.1	
Nationality	Saudi	942	91.2	91	8.8	0.033*
	Non-Saudi	8	72.7	3	27.3	
Education level	Primary	25	96.2	1	3.8	0.048*
	Intermediate	51	98.1	1	1.9	
	Secondary	203	90.6	21	9.4	
	University and above	669	90.4	71	9.6	
Marital Status	Married	668	92.3	56	7.7	0.014*
	Single	261	87.3	38	12.7	
	Divorced	21	100.0	0	0.0	
Occupation	Not working	305	88.9	38	11.1	0.008*
	Health unrelated job	601	92.7	47	7.3	
	Health-related job	44	83.0	9	17.0	
Family history of disc herniation	Yes	310	87.8	43	12.2	0.010*
	No	640	92.6	51	7.4	

\*P<0.05 (significant)

**Table 4: Multiple stepwise logistic regression for predictors of awareness level regarding disc herniation among the general population in Aseer region, Saudi Arabia**

Predictors(s)	B	SE	P	OR <sub>A</sub>	95% CI for OR <sub>A</sub>	
					Lower	Upper
Age	-0.30	0.11	0.006*	0.7	0.6	0.9
Non-Saudi	1.64	0.72	0.022*	5.2	1.3	21.1
Positive family history	0.66	0.22	0.003*	1.9	1.2	3.0
Constant	-2.27	0.84	0.007	0.1		
Model Pseudo-R <sup>2</sup> ; P				0.37; 0.001*		
Model accuracy				91.1%		

SE: Standard error; OR<sub>A</sub>: Adjusted odds ratio; CI: Confidence interval. \*P<0.05 (significant)

usual in most people, and only about 10% of people still have sufficient pain after 6 weeks to consider surgery. Sequential magnetic resonance images have shown that the herniated portion of the disc tends to regress over time, with partial to complete resolution after 6 months in two-thirds of people.<sup>[11,12]</sup> General population may be aware of the clinical features of disc prolapse, risk factors, and preventive measures and this may lead to misdiagnosis of many cases and the initial clinical presentation may be misdiagnosed with many other medical conditions which are less severe and of less clinical impact.<sup>[13]</sup> This study revealed that the general population in Aseer region recorded very poor awareness regarding disc prolapse, risk factors, treatment, and preventive measures. As the majority of the sample were highly educated, this poor awareness may be due to lack of health education sessions, community indifference regarding this problem which may end in permanent disability.

These findings were in contrast to that recorded by Sahrah *et al.* 2017 in Taif city who recorded high knowledge level regarding disc herniation and its risk factors. As for diagnostic measures, the current study findings were similar to that recorded by Taif city study<sup>[2]</sup> as both recorded poor knowledge regarding how to diagnose disc herniation health condition. Moussa *et al.*<sup>[14]</sup> reported that most of the patients were aware by the fact that lack of physical exercise is an impotent cause of musculoskeletal pain 88.9% but neglected the role of long use of mobiles (23.6% and 42.1%), respectively. Darwish and Zuhair<sup>[15]</sup> reported that knowledge obtained from participant in other Saudi areas varies from area to another. Appositive mental attitude, regular activity, and a prompt return to work are all very important element of recovery. These are inconsistent with the current study findings where the majority of the samples were knowledgeable risk factors of disc prolapse. The studied population also recorded poor level of knowledge regarding treatment methods and this forces the community to move toward establishing a strategic plan to improve these areas of defect in knowledge to avoid long run disabilities due to either misdiagnosis or late detection of cases.

### Study limitation

Irrespective of the large sample of the study participants, all included were able to read and write and those who were illiterate not included as the questionnaire was self-administered that may overestimate awareness level, which the researcher think that it was not of significant impact as awareness level was poor.

## Conclusions and Recommendations

The present study showed that awareness regarding disc herniation among the general population was very poor for all domains. Health education sessions regarding the disc herniation and how to deal with and prevent can be organized regularly in clinics and primary health centers to sensitize and create awareness among the general population. Mass media and other voluntary organizations can also be involved in creating awareness and improving healthy behavior can be held regularly at primary health centers to detect these complications earlier and provide optimal management to stop their progress.

## Acknowledgement

We would like to thank Abdullah Awad Alshuft, Abdulmajeed Ali Alamyateem and Saeed Saleh Nazih for their contribution in the data collection for this research.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

- Jordan J, Konstantinou K, O'Dowd J. Herniated lumbar disc. *BMJ Clin Evid* 2009;2009.
- Sahrah H, Mansour M, Elhoussein N, Ahmed R, Alzahrani A. Disc prolapse awareness among population in taif- Saudi Arabia. *Int J Adv Res* 2016;4:188-97.
- Typical Symptoms of a Herniated Disc [Internet]. Available from: <https://www.spine-health.com/conditions/herniated-disc/typical-symptoms-a-herniated-disc>. [Last cited on 2018 Sep 12].
- Hammer C, Heller J, Kepler C. Epidemiology and pathophysiology of cervical disc herniation. *Semin Spine Surg* 2016;28:64-7.
- Mesfin A, Jain A, Menga EN. National trends in the treatment of thoracic disc herniation with and without myelopathy: Analysis of 9,811 patients. *Spine J* 2012;2:S12.
- Sari H, Uludag M, Gun K, Mogulkoc N, Gokpinar HH. Multilevel thoracic disk herniations in a young woman. *Am J Phys Med Rehabil* 2013;92:551.
- Carr DA, Volkov AA, Rhoiney DL, Setty P, Barrett RJ, Claybrooks R, *et al.* Management of thoracic disc herniations via posterior unilateral modified transfacet pedicle-sparing decompression with segmental instrumentation and interbody fusion. *Glob Spine J* 2017;7:506-13.
- Funayama T, Noguchi H, Abe T, Miura K, Nagashima K, Kumagai H, *et al.* A case of thoracic disc herniation characterized by marked posture-related dynamic changes in neurological symptoms. *Interdiscip Neurosurg* 2018;14:1-4.
- Fardon DF, Milette PC. Nomenclature and classification of lumbar disc pathology: Recommendations of the Combined Task Forces of the North American Spine Society, American Society of Spine Radiology, and American Society of Neuroradiology. *Spine* 2001;26:E93-113.
- Gibson JNA, Waddell G. Surgical interventions for lumbar disc prolapse. In: *The Cochrane Library*, Issue 2, 2008. Chichester, UK: John Wiley and Sons Ltd.; 2007.
- Herniated Disk in the Lower Back - OrthoInfo - AAOS [Internet]. Available from: <https://orthoinfo.aaos.org/en/diseases--conditions/herniated-disk-in-the-lower-back>.
- Hasan MK. Prevalence and risk factors of low back pain among nurses in operating rooms, Taif, Saudi Arabia. *Am J Res Commun* 2013;1:50.
- Kuniya H, Aota Y, Kawai T, Kaneko K, Konno T, Saito T. Prospective study of superior cluneal nerve disorder as a potential cause of low back pain and leg symptoms. *J Orthop Surg Res* 2014;31:139.
- Moussa S, Al Zaylai F, Alomar A, AlOufi H, AlNodali N, Thif Allh Alshmmry R, *et al.* Musculoskeletal Pain in Hail Community: Medical and Epidemiology Study; Saudi Arabia [Internet]. Vol. 4, *International Journal of Science and Research (IJSR)* ISSN. 2013. Available from: [www.ijrsr.net](http://www.ijrsr.net).
- Darwish MA, AL-Zuhair SZ. Musculoskeletal pain disorders among secondary school Saudi female teachers. *Pain Res Treat* 2013;2013:878570.