Awareness Of Disc Prolapse Among Population In Qassim Region, Saudi Arabia

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Abstract

Objective: This study aimed to determine the level of knowledge and awareness toward disc herniation in the population of Qassim, Saudi Arabia.

Methodology: This is a cross-sectional study conducted among the general population living in the Qassim region, Saudi Arabia. A pre-tested validated structured questionnaire was distributed among the targeted participants using an electronic questionnaire. The questionnaire was composed of three main parts that include socio-demographic data, knowledge, and awareness of disc prolapse (DP), and knowledge about risk factors of DP.

Results: A total of 355 surveys were received. The most frequent age group was 18 – 25 years old (43.4%) with males being dominant (72.4%). The prevalence of back pain associated with DP was 11%. The overall mean awareness score was 13.1 (SD 3.97). Low, moderate, and high awareness levels were detected among 25.9%, 45.9%, and 28.2%, respectively. Factors associated with increased awareness were age group of more than 40 years, those who have back pain associated with DP, those with a family history of DP, those who attended awareness activity, those who knew how DP is diagnosed, and those who knew the best imaging modality to diagnose DP.

Conclusion: The DP awareness of the general population in the Qassim region was adequate. Increased awareness levels are associated with increasing age. Further, those who had been affected by the DP who had a family history and were aware of how it is diagnosed had better awareness levels than the rest of the group.

Keywords: Disc prolapse, disc herniation, back pain, awareness, general population

INTRODUCTION

Disc herniation in our society causes an undeniable burden to patients and the healthcare system. The intervertebral discs are round, with a tough outer layer called the annulus and a central core called the nucleus. Vertebral discs act as shock absorbers for the spinal bones. A herniated disc is a fragment of the disc nucleus that is forced out of the annulus into the spinal canal through a tear or rupture in the annulus. Herniated discs may compress spinal nerves causing symptoms like pain, numbness, tingling, and loss of function. At any vertebral column level, herniation of the disc could occur, but more commonly in the lower back (lumbar spine)(1-2). There are several risk factors of disc herniation: aging, smoking, obesity, diabetes, and occupational work (3-4). Raising awareness of disc herniation will have a large impact on the quality of life of patients with disc herniation.

Prevalence of lower back pain (one of the herniated disc symptoms) was estimated to range from 15 to 45% worldwide. (5) In Saudi Arabia, a study was done in Qassim province, including 5,743 participants, showed about 18.8% of participants report back pain (6). Several studies were done in Saudi Arabia about disc herniation. One study was done in Taif province in 2016, including 1034 participants to know the level of awareness regarding disc herniation among people in Taif. The study showed that most participants are not complaining of disc herniation, have no family history, have good knowledge about risk factors, and poor knowledge about diagnosis and preventive measures (7).

Another study was done in Aseer region in 2019, including 1044 participants. Unfortunately, the result showed that only 9% of the study participants have a good awareness level regarding all aspects of disc herniation (8).A newer study was done in Jeddah region in Jun 2020, including 1026 individuals, measured the awareness level regarding disc herniation among the general population, and compared them to Jeddah's medical students. Results showed that 54.1% of the general population compared to 77.7% of medical students reported good knowledge regarding disc herniation (9). No similar studies were done in Qassim, and that is why this study's purpose is to investigate the level of awareness about disc herniation among the general population in Qassim.

METHODOLOGY

This cross-sectional study was carried out among general population from December 2020 to March 2021. The awareness of DP had been assessed using two dimensions such as general knowledge about DP and knowledge about DP risk factors. The general knowledge about DP has been assessed8-item 8 item questionnaires where the correct answer for each question has been identified and coded with 1 while the incorrect answer has been coded with 0. Item 4 is a multiple response answer with 4 correct answers, giving a total of 11 items. All items were summed up to obtain the total score. For the knowledge about DP risk factors, has been assessed using 9-item questionnaires where the perceived right answer for each question has coded with 1 while the perceived wrong answer has been coded with 0. Item #17 is a multiple response answer with 3 right answers, giving total items of 11. The total score was obtained by adding all 11 items. Finally, to get the overall score of awareness, we then summed up all questions in both dimensions. A possible score range from 0 – 22 points had been generated which indicates that the higher the score the higher the awareness toward DP and by using 50% and 75% to determine the level of awareness, participants were classified as low awareness if the score points were below 50%, 50% to 75% score points were considered as moderate and above 75% were considered as high awareness level. The ethical approval was obtained from Deanship of Scientific Research at Qassim University with IRB No. 21-01-05 dated September 12, 2020.

Categorical variables are presented as numbers and percentages (%) while continuous variables were summarized as means and standard deviations. The total awareness score was compared with the socio-demographic characteristics, prevalence of back pain associated with DP, family history, attendance in awareness, and treatment for DP by using Mann Whitney Z test and Kruskal Wallis H test. A p-value of <0.05 (two-sided) was used to indicate statistical significance. Normality tests were performed using Kolmogorov-Smirnov test as well as Shapiro Wilk test. The awareness score follows the abnormal distribution. Thus, non-parametric tests were applied. All data analyses were performed using the statistical package for social sciences, version 21 (SPSS, Armonk, NY: IBM Corp.).

RESULTS

This study comprised 355 subjects. As seen in Table 1, the most common age group was 18 – 25 years (43.4%) with the majority being males (72.4%) and nearly all being Saudis (72.4%). Overweight respondents constitute 40% while 29.9% were obese. Most of the respondents were professional (80.3%) and 45.1% were employed.

Table 1: Socio-demographic characteristics of participants (n=355)

Study data	N (%)
Age group	
• 18 – 25 years	154 (43.4%)
• 26 – 40 years	79 (22.3%)
• >40 years	122 (34.4%)
Gender	
• Male	257 (72.4%)
• Female	98 (27.6%)
Nationality	
• Saudi	352 (99.2%)
• Non-Saudi	03 (0.80%)
BMI level	
• Underweight (<18.5 kg/m2)	15 (04.2%)
• Normal (18.5 – 24.9 kg/m2)	92 (25.9%)
• Overweight (25 – 29.9 kg/m2)	142 (40.0%)
• Obese (≥30 kg/m2)	106 (29.9%)
Educational level	
• Illiterate	13 (03.7%)
• Primary	03 (0.80%)
• Secondary	54 (15.2%)
• University and above	285 (80.3%)
Occupation	
• Student	110 (31.0%)
• Employee	160 (45.1%)
• Housewife	24 (06.8%)
• Retired	19 (05.4%)
• Unemployed	42 (11.8%)

In Table 2, the prevalence of back pain associated with DP was 11% and a family history of DP was found among 25.4% which were detected among 1 – 3 family members (96.7%). Only 2.5% of participants had ever attended an awareness activity about DP mostly living in the Qassim region (2.3%) and attended at their institution (0.8%). Furthermore, more than one-third (34.1%) knew how DP is diagnosed with MRI as the most common imaging modality for DP diagnosis.

Table 2: Prevalence of back pain associated with DP, family history, attendance in awareness and treatment modality for DP (n=355)

Variables	N (%)
Do you have back pain that was diagnosed by a doctor as DP?	
• Yes	39 (11.0%)
• No	316 (89.0%)
Is there any history of DP in your family?	
• Yes	90 (25.4%)
• No	158 (44.5%)
• I don't know	107 (30.1%)
How many cases of DP in the family? (n=90)	
• 1 – 3	87 (96.7%)
• 4 – 7	03 (03.3%)
Have you ever visited an awareness activity about DP?	
• Yes	09 (02.5%)
• No	346 (97.5%)
If yes, in which region was it?	
• Qassim	08 (02.3%)
• Other region	01 (0.30%)
• I did not visit any awareness activity	346 (97.5%)
Where was that?	
• Your institution	03 (0.80%)
• Public place (park, mall, etc.)	02 (0.60%)
• Hospital	02 (0.60%)
• Other	02 (0.60%)
• I did not visit any awareness activity	346 (97.5%)
Do you know how DP is diagnosed?	
• Yes	121 (34.1%)
• No	234 (65.9%)
Do you know what is the best modality in the radiology department to diagnose DPs?	
• Yes	132 (37.2%)
• No	223 (62.8%)
If yes, what is it? (n=132)	
• MRI	101 (76.5%)
• CT	18 (13.6%)
• X-ray	12 (09.1%)
• US	01 (0.80%)

In the assessment of knowledge about DP (see Table 3), the prevalence of participants who knew DP was 65.9%. 89.6% do not believe that back pain is always a DP and 45.6% were aware of DP risk factors. The most common risk factor of DP was obesity (88.7%). Respondents who believe that lifestyle would change after DP was 89.6%, however, 41.7% knew how to prevent themselves from DP and a great proportion (76.1%) were sure that DP can be treated. The most common method of treatment for DP was physiotherapy (68.9%). The mean knowledge score of the knowledge about DP was 6.39 (SD 1.94).

Table 3: Knowledge about DP (n=355)

Knowledge statement	N (%)
1. Do you know what DP is?	
• Yes *	234 (65.9%)
• No	121 (34.1%)
2. Do you think that back pain always means DP?	
• Yes	37 (10.4%)
• No *	318 (89.6%)
3. Do you know of DP risk factors?	
• Yes *	162 (45.6%)
• No	193 (54.4%)
4. Risk factor of DP †	
• Obesity *	315 (88.7%)
• Smoking *	24 (06.8%)
• Occupation *	179 (50.4%)
• Genetics *	179 (50.4%)
5. Do you think that lifestyle (i.e., activities of daily living) would change after DP?	
• Yes *	318 (89.6%)
• No	37 (10.4%)
6. Do you know how to prevent yourself from DP?	
• Yes *	148 (41.7%)
• No	270 (58.3%)
7. Do you think that DP can be treated?	
• Yes *	270 (76.1%)
• No	04 (01.1%)
• I don't know	81 (22.8%)
8. Method of treatment for DP (n=270)	
• Medication *	17 (06.3%)
• Surgical therapy	60 (22.2%)
• Physiotherapy *	184 (68.9%)
• Alternative medicine	7 (02.6%)
Knowledge of the DP score (mean ± SD)	6.39 ± 1.94

* Indicates correct answer.
† Variable with multiple response answers.

Regarding the knowledge about DP risk factors, nearly all (95.5%) thought that bad habits such as bad sitting position or prolonged sitting, incorrect carrying of heavy objects, etc., could increase the risk of getting DP, 86.2% believe that lack of knowledge influence the incidence of DP and 72.1% were confident that the severity of DP is related to the late diagnosis of the disease. In connection with this, 67% of the respondents considered regular exercise as prevention of DP while 78.6% were aware of the proper way to pick up something from the floor. The prevalence of participants who knew that increasing age and obesity were the risk factors of DP was 62.5% and 87.6%, respectively. About 45.9% of respondents knew about the symptoms of DP and the most common was pain with activity and postural changes (66.9%). The mean score of the knowledge about DP risk factor was 6.75 (SD 2.45). The overall mean awareness score based on the two knowledge dimensions was 13.1 (SD 3.97) with low, moderate and high awareness levels were found among 25.9%, 45.9% and 28.2%, respectively (see Table 4).

Table 4: Knowledge about DP risk factors (n=355)

Knowledge statement	**N (%)**
9. Do you think that bad habits (e.g. bad sitting position or prolonged sitting, lifting heavy objects incorrectly, overweight, sedentary lifestyle … etc.) will increase the risk of getting DP?	
• Yes *	339 (95.5%)
• No	03 (0.80%)
• I don't know	13 (03.7%)
10. Do you think that lack of knowledge affects the incidence of DP?	
• Yes *	306 (86.2%)
• No	18 (05.1%)
• I don't know	31 (08.7%)
11. Do you think that severity of DP is related to late diagnosis of DP?	
• Yes *	256 (72.1%)
• No	32 (09.0%)
• I don't know	67 (18.9%)
12. Do you think the regular exercise will prevent you from the DP?	
• Yes *	238 (67.0%)
• No	45 (12.7%)
• I don't know	72 (20.3%)
13. Do you know what is the correct way to pick up something from the floor?	
• Yes *	279 (78.6%)
• No	44 (12.4%)
• I don't know	32 (09.0%)
14. Do you think increased age is a risk factor for DP?	
• Yes *	222 (62.5%)
• No	61 (17.2%)
• I don't know	72 (20.3%)
15. Do you think that obesity is considered as one of the risk factors of DP?	
• Yes *	311 (87.6%)
• No	16 (04.5%)
• I don't know	28 (07.9%)
16. Do you know what are the symptoms of the DP?	
• Yes *	163 (45.9%)
• No	192 (54.1%)
17. Symptoms of DP (n=163) †	
• Numbness of the Lower limb (sciatica) *	107 (65.6%)
• Pain with activity and postural changes *	109 (66.9%)
• Fever	10 (06.1%)
• Weakness of the lower limb *	65 (39.9%)
• Only pain on the lower back	67 (41.1%)
Knowledge of the DP risk factor score (mean ± SD)	**6.75 ± 2.45**
Overall awareness score (mean ± SD)	**13.1 ± 3.97**
Level of awareness	
• Low	92 (25.9%)
• Moderate	163 (45.9%)
• High	100 (28.2%)

* Indicates correct answer.
† Variable with multiple response answers.

In Table 5, Mann Whitney test and Kruskal Wallis test revealed that the mean awareness score was significantly higher among the older age group (H=13.253; p=0.001), those with back pain associated with DP (Z=3.953; p<0.001), those with a family history of DP (Z=6.873; p<0.001), those who visited an awareness activity (Z=2.465; =0.014), those who knew how DP is diagnosed (Z=10.232; p<0.001) and those who knew the best imaging modality to diagnose DP (Z=9.584; p<0.001) while the difference in the awareness score of gender, BMI level, educational level and occupation were not statistically significant (p>0.05).

Table 5: Association between the overall awareness score in regards to the socio-demographic characteristics, prevalence of back pain associated with DP, family history, attendance in awareness and treatment for DP (n=355)

Factor	awareness Score (21) Mean ± SD	Z/H-test	P-value
Age group [a]			
• 18 – 25 years	12.9 ± 4.29		
• 26 – 40 years	12.3 ± 3.51	H=13.253	**0.001 ****
• >40 years	14.1 ± 3.67		
Gender [b]			
• Male	13.0 ± 4.04	Z=0.930	0.352
• Female	13.4 ± 3.78		
BMI level [a]			
• Normal or Underweight	12.9 ± 3.93		
• Overweight	13.5 ± 3.88	H=2.673	0.263
• Obese	12.8 ± 4.13		
Educational level [b]			
• Secondary or below	13.2 ± 4.01	Z=1.547	0.122
• University or above	11.7 ± 2.32		
Occupation [a]			
• Employee	13.4 ± 3.64		
• Unemployed	12.5 ± 3.99	H=2.888	0.236
• Student	13.4 ± 4.38		
Do you have back pain that was diagnosed by a doctor as DP? [b]			
• Yes	15.4 ± 3.28	Z=3.953	**<0.001 ****
• No	12.9 ± 3.96		
Family history of DP [b]			
• Yes	15.5 ± 2.87	Z=6.873	**<0.001 ****
• No/I don't now	12.3 ± 3.98		
Visited an awareness activity about DP? [b]			
• Yes	16.4 ± 3.54	Z=2.465	**0.014 ****
• No	13.1 ± 3.95		
Do you know how DP is diagnosed? [b]			
• Yes	16.1 ± 3.08	Z=10.232	**<0.001 ****
• No	11.6 ± 3.51		
Do you know what is the best modality in radiology department to diagnosis the DPs? [b]			
• Yes	15.7 ± 3.55	Z=9.584	**<0.001 ****
• No	11.6 ± 3.39		

[a] P-value has been calculated using Kruskal Wallis H-test.
[b] P-value has been calculated using Mann Whitney Z-test.
** Significant at p<0.05 level.

DISCUSSION

The present study is carried out to determine the level of awareness among the general population regarding disc prolapse. To the best of our knowledge, no study had done in the Qassim region, Saudi Arabia measuring the awareness level of the adult population regarding this disease which is a very important topic to discuss since it may cause spinal injury if not diagnosed early. In this study, there was almost 25.9% of the sample had poor knowledge among people in Qassim. Based on the given criteria, 45.9% of the population had a moderate level of awareness, 28.2% were high and the rest had a low awareness level (25.9%) (mean score: 13.1; SD 3.97, out of 22 points). In Saudi Arabia, a similar report had been published by Alamri et al (9). Accordingly, they found out that 65.9% (54.1% general population vs 77.7% medical students) of the respondents demonstrated good knowledge about DP. Another study conducted in Riyadh, Saudi Arabia (10), indicated that the overall knowledge of Saudis regarding disc herniation was appropriate, with consistent findings as carried out in Al Madinah population (11). However, in a study by Alshehri et al (8), the awareness level was

suboptimal. 91% of the general population of Aseer Province, Saudi Arabia had a poor awareness level and only 9% were good. They further concluded that the overall awareness levels were very poor in all domains adding that the population requires regular health education to address the gaps in knowledge. Another study published in Malawi (12), reported that the patient with lower back pain had partial knowledge about the course and causes of LBP and hold negative and beliefs as well. Lack of education is the primary reason for the deficiency in knowledge. As Tarimo and Diener suggested that patient's perception of the cause and nature of the disease may improve the achievement of treatment goals (12).

Data in this project revealed that increasing age, having a diagnosed back pain related to DP, a family history of DP, attendance to awareness activity, understanding on how DP is diagnosed, and awareness of the best imaging modality to diagnose DP were the relevant factors of DP. In a study conducted by Alshehri et al (8), they found out that good awareness was significantly higher among Saudi, university graduates, single participants, health-related jobs, and family history of disc herniation. Although we found that a family history had a significant association with awareness, there was no other data to match with the previous study as we found no significant association between the awareness level among gender, BMI level, educational level, and occupation. Other papers reported in Saudi Arabia showed a significant relationship between awareness level among gender, place of residence, and occupation such as the study of Alobari et al (10), as well as the study of Murshid et al (11).

Incidentally, the prevalence of back pain associated with DP was 11% while nearly all samples (89%) had no back pain. Further, a family history of DP accounted for 25.4% where it was detected among 1 – 3 family members (96.7%). This is comparable with the study of Sahrah et al (7). According to their report, 81.4% of the sample were not complaining about DP and 53.8% had no family history. Similarly, Alamri et al (9), reported that between medical students and general population, the general population had slightly higher to being suffered from DP (10.5%) while only 4% from the medical students with an overall family history of DP compromising of 40%.

Attendance at any DP awareness activity is one of the most essential factors of knowledge. In our results, only 2.5% of the population had visited awareness activity, which is very poor. In a paper published by Murshid et al (11), 6.2% of the population had already attended awareness activity, slightly higher than our report. Awareness education is an integral part of the knowledge where an individual can obtain more information about the disease. Thus, an awareness campaign whether it is through social media or mass media is necessary for preventive measures.

Moreover, we came to know that although nearly two-thirds (65.6%) knew about DP and that 89.6% knew about its risk factors, however, their knowledge about how DP is diagnosed was not sufficient, merely 34.1% of the sample population were aware of how it is being diagnosed. This is not consistent with the paper of Sahrah et al (7), as a great proportion (66.5%) of their sample population have not heard about DP, although 81.6% had adequate information about its risk factors, however, only 20.1% knew about the way on how to diagnose DP. Likewise, a lack of knowledge had been observed regarding the imaging modality to detect DP as 37.2% of the sample were sure about it, with MRI being the most frequently mentioned (76.5%) with consistent findings as reported by Alamri et al (9), but different from the study of Alshehri et al (8), as well as the study of Murshid and colleagues (11), where CT scan was the most common imaging modality for the diagnostic test of DP.

In our further investigations, 76.1% of the population were aware that DP is treatable with physiotherapy as the most sought treatment for DP (68.9%), which was consistent with the paper of Alamri et al (9). However, in a paper published by Alshehri et al (8), only 23.1% of the general population knew how to handle disc herniation and the most commonly sought treatment method was analgesics adding that 44.8% were aware of its possibility after the treatment. In our study, however, a considerable number of the population (89.6%) believe that lifestyle might be changed after the treatment which was higher than the previous report.

The perceived knowledge of the population regarding risk factors was evidently clear in this study. The majority of the respondents were aware of the most common disease risk factors and that include obesity (87.9%) and increasing age (62.5%) whereas regarding the symptoms their knowledge was less as 45.9% of them had information about it, where pain with activity and postural changes being identified as the most dominant symptoms (66.9%). In a study by Sahrah and colleagues (7), most of the respondents were aware of the risk factors of DP including bad habits (81.6%), lack of knowledge of DP (78.7%), increasing age (64.2%) and obesity (60.2%) which were almost consistent with our reports. Other papers also showed great knowledge in terms of DP risk factors such as the study done in Aseer Province (8) and in Al Madina (11).

CONCLUSION

In our study, there was almost 25.9% of the sample had poor knowledge among people in Qassim. Increased awareness levels are associated with increasing age. Further, those who had been affected by the DP who had a family history and were aware of how it is diagnosed had better awareness levels than the rest of the group. Although, the perceived level of awareness is satisfactory. There is still room for improvement. The bridge of the gap can be narrowed by providing more health education. In addition, an awareness campaign through social media is an instrumental piece to bring education to the population. Further research is needed to determine the awareness level of the general population in our region.

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