Medical students vs general public awareness regarding disc prolapse in Jeddah

Zeyad A. Alamri1, Nawaf K. Althobaiti1, Anas T. Halabi1, Hussam O. Bashraheel1, Abdulrahman R. Shalwala1, Mohammed A. Alyousef1

1Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

Abstract

Background: Disc herniation is a condition where tearing occurs in the outer annular layer of the intervertebral pad leading the inner gel-like material to bulge outwards the spinal cord, due to the high load of the vertebrae. This will produce back pain and symptoms in different sites according to the level of the herniation in the vertebral column. Aim: To compare the level of awareness regarding disc herniation among the general population and medical students in Jeddah. Methodology: A descriptive cross-sectional study was conducted through an electronic questionnaire to assess the level of awareness regarding disc prolapse among the general population and medical students in Jeddah. The questionnaire was in the Arabic language, it was taken and validated by the previous study which took place in Taif. Results: Our studied sample involved 1026 individuals aged between 11 and 99 years, with a mean age of 34.03 ± 13.28 years old. More than half of the respondents were female (55.4%), most of them were Saudi nationals (90.1%), and most of them have received a higher education (67.7%). Results showed that 54.1% of the general population and 77.7% of medical students reported good knowledge regarding this condition. Conclusion: This study revealed that the level of awareness regarding disc prolapse among the general population and medical students was poor in some respects 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 standard imaging method to diagnose this disease.

Keywords: Cervical disc prolapse, disc herniation awareness in Jeddah, disc prolapse awareness in Jeddah, lumbar disc prolapse, radiculopathy

Introduction

Disc herniation is a condition in which tearing occurs in the outer annular layer of the intervertebral pad leading the inner gel-like material to bulge outwards the spinal cord due to the high load on the vertebrae. This will produce back pain and symptoms in different sites according to the level of the herniation in the vertebral column. Pressure or an immoderate strain can cause disc herniation. Besides, the disc material can rupture as people advance in age naturally and ligaments start to weaken. As the degeneration process continues, a mild strain or twist can cause the disc to rupture. However, some people are more vulnerable to disc herniation at different sites along the spine (especially at L4–L5 or L5–S1 leading to lower back pain, or C5–C6 leading to upper back pain). The critical risk factors of disc herniation are aging, smoking, and obesity, all of which may result in lumbar disc herniation. Prolonged sitting without intermittent breaks can also increase the pressure on the disc. Studies show that people with the highest risk of getting disc herniation are those of ages between 30 and 50 years old. The patient with a herniated disc presents with pain in the back accompanied by paresthesia, sensory loss, or muscle weakness. Physical findings are localized tenderness, reduction in the range of motion, and radiculopathy with provocative testing of the lower limbs. Regarding disc

Access this article online

Quick Response Code:
Website: www.jfmpc.com
DOI: 10.4103/jfmpc.jfmpc_36_20

How to cite this article: Alamri ZA, Althobaiti NK, Halabi AT, Bashraheel HO, Shalwala AR, Alyousef MA. Medical students vs general public awareness regarding disc prolapse in Jeddah. J Family Med Prim Care 2020;9:3030-6.
prolapse treatment, more than 70% of the patients are relieved by conservative therapy, which includes physiotherapy; however, the surgical method is the treatment of choice, which provides better long-term benefits.\[12,13\]

A few studies were done in Saudi Arabia regarding disc prolapse awareness. A study was done in Taif in 2016 involving 1034 participants to investigate the level of awareness regarding disc herniation among people in Taif. The study showed good knowledge about the disease itself, however, participants had a lack of knowledge about risk factors and preventive methods of disc herniation.\[16\]

Another study took place in Aseer province on March 2019 involving 1044 participants aged between 15 and 70 years old to assess the awareness of the general population regarding disc herniation and to identify the predictors for their awareness. The study participants showed poor awareness levels regarding all the aspects of disc herniation.\[17\]

No previous studies were done in Jeddah, and therefore this study aims to measure the level of awareness about disc herniation among the general population and medical students in Jeddah.

**Methodology**

This descriptive, cross-sectional study was conducted through an electronic questionnaire to assess the level of awareness regarding disc prolapse among the general population and medical students in Jeddah. The study was certified by the King Abdulaziz University Hospital Research Ethics Committee on 4/11/2019. The questionnaire was in the Arabic language, it was taken and validated by the previous study which took place in Taif.\[14\] Data were collected in June 2019 at King Abdulaziz University. The type of sample was a convenient sample, and the study involved 1026 participants from both sexes. Inclusion criteria included any participant from the general population and medical students living in Jeddah. The first section of the questionnaire was about socio-demographic data, which included age, sex, nationality, educational level, marital status, and the academic year for medical students, and occupation for the general public. The second section involved questions concerning knowledge and awareness about disc prolapse. The third section involved questions regarding knowledge about risk factors of disc prolapse.

**Data analysis**

After collection, data were revised, coded, and then analyzed using IBM SPSS version 21. The given figures were formed using Microsoft Excel. All scientifically correct answers for awareness elements were given a score of 1 point. Then all correct answers were summed to have an ultimate score. The score was then converted to score percent by dividing the actual score by the highest score (19 points) and classified as *poor awareness* for individuals who scored 50% or less, and a *good level* for those who had a score above 50%. The study variables were labeled by frequency distribution with a percentage (%). Regarding the characteristics of the participants, Chi-square was applied to describe the relation between them and evaluate the differences between the categorical variables.

**Results**

Our studied sample involved 1026 individuals aged between 11 and 99 years old, with a mean age of 34.03 ± 13.28 years. More than half of the participants were female (55.4%). Most of the respondents were Saudi nationals (90.1%), and over two thirds have received a higher education (67.7%).

Also, the greater portion of the participants were married, 53.5%; 52.9% were employed; and 34.6% worked in education. Medical students composed 21.8% of the sample, and most of them were from the clinical years, 75% [Tables 1 and 2].

The results showed that 54.1% of the general population and 77.7% of medical students reported good knowledge regarding the disease. Only a few respondents from the general population and medical students revealed that they have suffered from a previous disc prolapse, they represented 10.5% and 4%, respectively. Regarding any history of disc prolapse in the family, 40% of the general population and medical students had positive cases, and 90% of them had one to four affected family members. Also, 1.9% of the general population revealed that the number of cases in their family was more than 10. Concerning disc prolapse treatment, 87.9% of medical students and 76.4% of the general population thought that disc prolapse is curable. Regarding the type of treatment, 58.6% of the general population reported that physiotherapy is the treatment of choice, whereas 55.5% of medical students reported that surgical therapy is the treatment of choice; and only 6.7% of the general population reported that the alternative medicine is the best type of treatment. Concerning visiting an awareness activity about the disease, 94.6% of medical students and 93.9% of the general population have never visited awareness campaigns. Regarding the diagnostic method, 64.6% of the general population and 72.4% of medical students considered magnetic resonance imaging (MRI) as the best diagnostic method [Table 3].

The results showed that half of the participants had good knowledge about the disease (50.8% among males and 49.2% among females). Most of the participants who revealed good knowledge were Saudi nationals, and they represented 91.9%. Concerning marital status, 52% of the participants who reported good knowledge were married. According to the educational level, most of the participants who reported good knowledge have received a higher education, and they represented 73.3%, whereas only 1.8% of the primary educated participants reported good knowledge. Concerning the academic year among medical students, more than half of the individuals who reported good knowledge were from the clinical years, and they represented 58.5%. Regarding the occupational field, most of the respondents who reported good knowledge were working in the educational field, and they represented 33.3% [Table 4].
Table 1: Sociodemographic characteristics of the studied sample

| Variable               | Frequency (n) | Percent % |
|------------------------|---------------|-----------|
| Age                    | Mean±S.D      | 34.03±13.28 |
| Gender                 |               |           |
| Male                   | 458           | 44.6%     |
| Female                 | 568           | 55.4%     |
| Marital status         |               |           |
| Single                 | 439           | 42.8%     |
| Married                | 549           | 53.5%     |
| Divorced / widowed     | 38            | 3.7%      |
| Educational level      |               |           |
| Primary                | 14            | 1.7%      |
| Secondary              | 37            | 4.6%      |
| University and above   | 208           | 25.9%     |
| None                   | 543           | 67.7%     |
| Academic year          |               |           |
| Med 18                 | 39            | 17.4%     |
| Med 17                 | 17            | 7.6%      |
| Med 16                 | 74            | 33.0%     |
| Med 15                 | 75            | 33.5%     |
| Med 14                 | 19            | 8.5%      |
| Nationality            |               |           |
| Saudi                  | 924           | 90.1%     |
| Non-Saudi              | 102           | 9.9%      |
| Type of occupation     |               |           |
| Office                 | 158           | 21.0%     |
| Handiwork              | 13            | 1.7%      |
| Military               | 60            | 8.0%      |
| Housewife              | 188           | 25.0%     |
| Health                 | 37            | 4.9%      |
| Educational            | 260           | 34.6%     |
| Others                 | 35            | 4.7%      |
| Occupational length    |               |           |
| 1-5                    | 124           | 1.4%      |
| 6-10                   | 90            | 15.5%     |
| 11-15                  | 62            | 10.7%     |
| 16-20                  | 77            | 13.3%     |
| More than 20           | 226           | 39.0%     |

| Table 2: Sociodemographic data among the general population and medical students in Jeddah

| Studied Sample | Medical Students (n=224) | General Population (n=802) | No. | Percentage |
|----------------|--------------------------|---------------------------|-----|------------|
| Age            | Mean±S.D                 | Mean±S.D                  |     |            |
| Gender         |                          |                           |     |            |
| Male           | 131                      | 327                       | 58.5% | 40.8%      |
| Female         | 93                       | 475                       | 41.5% | 59.2%      |
| Nationality    |                          |                           |     |            |
| Saudi          | 214                      | 710                       | 95.5% | 88.5%      |
| Non-Saudi      | 10                       | 92                        | 4.5%  | 11.5%      |
| Educational Level |                |                           |     |            |
| Primary        | 14                       | 543                       | 1.7%  | 67.7%      |
| Middle         | 37                       |                           | 4.6%  |            |
| High school    | -                        | 208                       | 25.9% |            |
| University and above |        | 543                       | 67.7% |            |
| Marital Status |                          |                           |     |            |
| Single         | 210                      | 229                       | 93.8% | 28.6%      |
| Married        | 13                       | 536                       | 5.8%  | 66.8%      |
| Divorced/Widowed | 1                    | 37                        | 0.4%  | 4.6%       |
| Academic year  |                          |                           |     |            |
| Preclinical years | 56                  | 25%                       |       |            |
| Clinical years | 168                      | 75%                       |       |            |
| Occupation     |                          |                           |     |            |
| Employed       |                           | 424                       | 52.9% |            |
| Unemployed     | -                        | 378                       | 47.1% |            |
| Type of occupation |                   |                           |     |            |
| Office         |                           | 158                       | 19.7% |            |
| Handiwork      | -                        | 13                        | 1.6%  |            |
| Military       |                           | 60                        | 7.5%  |            |
| Housewife      |                           | 188                       | 23.4% |            |
| Health-care provider |           | 37                        | 4.6%  |            |
| Education      |                           | 260                       | 32.4% |            |
| Other          |                           | 35                        | 4.4%  |            |
| Occupational length |                   |                           |     |            |
| 1-5            | 124                      | 15.5%                     |       |            |
| 6-10           | 90                       | 11.2%                     |       |            |
| 11-16          | 62                       | 7.7%                      |       |            |
| 16-20          | 77                       | 9.6%                      |       |            |
| More than 20   | 226                      | 28.2%                     |       |            |

Discussion

This study assessed the level of awareness regarding disc herniation among medical students and the general population in Jeddah. It was found that most of the medical students and the general population had good knowledge about the disease in some respects such as: whether the disease is curable or not, the treatment, and diagnostic method of choice. Only a few participants from the general population thought that disc herniation could be treated with alternative medicine.

Our study findings are similar to a previous study which took place in Taif where most of the participants thought that bad habits and the lack of knowledge would increase the risk of disc prolapse. Furthermore, most of the participants thought that bad diagnosis is one of the main causes to worsen the disease symptoms. Also, more than half of the participants thought that increased age and obesity would eventually lead to disc prolapse. Some of the findings in Taif study are inconsistent to our study in which they reported that most of the participants did not know the gold standard imaging as the method of choice to diagnose the disease, alsomost of the participants did not know the preventive methods and the analgesics that can be used to relieve symptoms of the disease.\[^{16}\]

Our study contrasts with a previous study which took place in Aseer, even though most of the participants have received higher education, the studied population revealed poor level of knowledge regarding the disease risk factors, preventive measures, and treatment.\[^{17}\]

Our study and the previous studies findings were similar in which most of the participants have not visited any awareness campaigns about disc prolapse, which might be one of the main causes of poor awareness level.
Table 3: Distribution of the studied sample according to knowledge score regarding disc prolapse among the general population and medical students in Jeddah

| Studied                                                                 | Medical Students (224) | Population (802) | Significant Tests P |
|-------------------------------------------------------------------------|------------------------|------------------|---------------------|
| Knowledge                                                               | No.       | %    | No.       | %    |       |
| Poor                                                                    | 50        | 22.3% | 368       | 45.9% | 0.00* |
| Good                                                                    | 174       | 77.7% | 434       | 54.1% |       |
| Knows what is Disc Prolapse                                            | Yes        | 189   | 84.4%     | 524   | 65.3% | 0.00* |
|                                                                         | No         | 35    | 15.6%     | 278   | 34.7% |       |
| Have a Disc Prolapse                                                   | Yes        | 9     | 4%        | 84    | 10.5% | 0.00* |
|                                                                         | No         | 215   | 96%       | 718   | 89.5% |       |
| Know the Disc Prolapse risk factors                                    | Yes        | 142   | 63.4%     | 351   | 43.8% | 0.00* |
|                                                                         | No         | 82    | 36.6%     | 451   | 56.2% |       |
| Know how to deal with Disc Prolapse                                    | Yes        | 64    | 28.6%     | 158   | 19.7% | 0.00* |
|                                                                         | No         | 160   | 71.4%     | 644   | 80.3% |       |
| Know how to prevent the Disc Prolapse                                  | Yes        | 99    | 44.2%     | 251   | 31.3  |       |
|                                                                         | No         | 125   | 55.8%     | 551   | 68.7  | 0.00* |
| Thinks that analgesics can be used always to manage the Disc Prolapse   | Yes        | 45    | 20.1%     | 123   | 15.3% |       |
|                                                                         | No         | 132   | 58.9%     | 485   | 60.5% | .197  |
|                                                                         | I don't know| 47    | 21%       | 194   | 24.2% |       |
| Any history of Disc Prolapse in the family                             | Yes        | 91    | 40.6%     | 327   | 40.8% | 0.00* |
|                                                                         | No         | 133   | 59.4%     | 363   | 54.3% |       |
|                                                                         | I don't know| 0    | 0%        | 112   | 14%   |       |
| If yes, Number of cases                                                | 1-4        | 96    | 97%       | 343   | 92.7% | .369  |
|                                                                         | 5-7        | 3     | 3%        | 18    | 4.9%  |       |
|                                                                         | 7-10       | 0     | 0%        | 2     | 0.5%  |       |
|                                                                         | More than 10| 0    | 0%        | 7     | 1.9%  |       |
| Thinks that Disc Prolapse can be treated                                | Yes        | 197   | 87.9%     | 613   | 76.4% | 0.00* |
|                                                                         | No         | 12    | 5.4%      | 46    | 5.7%  |       |
|                                                                         | I don't know| 15    | 6.7%      | 143   | 17.8% |       |
| If yes, the type of treatment                                          | Pharmacotherapy| 2   | 1%        | 24    | 3.6%  | 0.00* |
|                                                                         | Surgical therapy| 111 | 55.5%     | 211   | 31.2% |       |
|                                                                         | Physiotherapy| 86   | 43%       | 396   | 58.6% |       |
|                                                                         | Alternative medicine| 1    | 0.5%      | 45    | 6.7%  |       |
| Visited an awareness activity about Disc Prolapse                       | Yes        | 12    | 5.4%      | 49    | 6.1%  | 0.07  |
|                                                                         | No         | 212   | 94.6%     | 753   | 93.9% |       |
| 12-If yes, the place                                                   | Institution| 7     | 58.3%     | 19    | 44.2% | 0.589 |
|                                                                         | Public places| 5    | 41.7%     | 24    | 55.8% |       |
| Thinks that the bad habits will increase the risk of Disc Prolapse      | Yes        | 205   | 91.5%     | 652   | 81.3% | 0.00* |
|                                                                         | No         | 5     | 2.2%      | 32    | 4.0%  |       |
|                                                                         | I don't know| 14    | 6.3%      | 118   | 14.7% |       |
| Thinks that the lack of knowledge will increase the risk of the disc prolapse | Yes    | 200   | 89.3%     | 658   | 82%   | 0.00* |
|                                                                         | No         | 13    | 5.8%      | 62    | 7.7%  |       |
|                                                                         | I don't know| 11    | 4.9%      | 83    | 10.2% |       |

Cont....
Limitations
Despite the large number of respondents in this study, all were educated and most of them were from the general population. Medical students represented less than one third of the studied sample. The comparison between the general population and medical students in this study probably led to less representative results since there was significant difference in the sample stratification and size between both groups.

Conclusion And Recommendations
This study revealed that the level of awareness regarding disc prolapse among the general population and medical students was poor in some respects 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 standard imaging method to diagnose this disease. This is a common disease that presents in the primary healthcare centers, increasing the level of awareness among both medical students and the general population would contribute significantly in reducing the burden and load over the primary healthcare centers and family physicians, whether by providing the scientific material in educational facilities or establishing awareness campaigns in public places such as commercial centers, hospitals, and schools.
Acknowledgement
This study was held in Road of Change Research Summer School as part of their groups, it is a peer to peer teaching program specific to teaching students how to conduct research, we would like to thank them for their significant contributions to the paper. Special thanks to Dr. Suzan Alkhodair for valuable English language editing and comments that were needed to complete our paper. We would like to thank the following interns and medical students: Mohammed Alsafhi, Salah Shihata, Mohammed Albakri, Fatimah Swead, Dr. Bayan Almuzaini for their data collection and constant support.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

References
1. Amin RM, Andrade NS, Neuman BJ. Lumbar Disc Herniation. Vol. 10, Current Reviews in Musculoskeletal Medicine. Humana Press Inc.; 2017. p. 507-16.
2. Kadow T, Sowa G, Vo N, Kang JD. Molecular basis of intervertebral disc degeneration and herniations: What are the important translational questions? Clin Orthop Relat Res 2015;473:1903‑12.
3. Seo TG, Kim DH, Kim IS, Son ES. Does C5 or C6 radiculopathy affect the signal intensity of the brachial plexus on magnetic resonance neurography? Ann Rehabil Med 2016;40:362‑7.
4. Caridi JM, Pumberger M, Hughes AP. Cervical radiculopathy:
A review. HSS J 2011;7:265-72.

5. Ren Z, Li Z, Li S, Xu D, Chen X. Small incision discectomy for lumbar disc herniation in 98 patients with 5-year follow-up: A retrospective case series study. Medicine (Baltimore). 2019;98:e15569.

6. Billy GG, Lemieux SK, Chow MX. Changes in lumbar disk morphology associated with prolonged sitting assessed by magnetic resonance imaging. PM R 2014;6:790-5.

7. Huang W, Han Z, Liu J, Yu L, Yu X. Risk factors for recurrent lumbar disc herniation: A systematic review and meta-analysis. Med (United States) 2016;95:e2378.

8. Seidler A, Bolm-Audorff U, Siol T, Henkel N, Fuchs C, Schug H, et al. Occupational risk factors for symptomatic lumbar disc herniation; a case-control study. Occup Environ Med 2003;60:821-30.

9. Euro U, Heliövaara M, Shiri R, Knekt P, Rissanen H, Aromaa A, et al. Work-related risk factors for sciatica leading to hospitalization. Scit Rep 2019;9:1-7.

10. Jönsson B, Strömqvist B. Influence of age on symptoms and signs in lumbar disc herniation. Eur Spine J 1995;4:202-5.

11. Jiang C, Li Y, Guo M, Li X, Guo J, Yu S, et al. Acupotomy therapy for lumbar disc herniation Protocol for a systematic review and meta-analysis. Vol. 97, Medicine (United States). Lippincott Williams and Wilkins; 2018.

12. Sabnis A, Diwan A. The timing of surgery in lumbar disc prolapse: A systematic review. Indian J Orthop 2014;48:127-35.

13. Kido T, Okuyama K, Chiba M, Sasaki H, Seki N, Kamo K, et al. Clinical diagnosis of upper lumbar disc herniation: Pain and/or numbness distribution are more useful for appropriate level diagnosis. J Orthop Sci 2016;21:419-24.

14. Akca N, Ozdemir B, Kanat A, Batcik OE, Yazar U, Zorba OU. Describing a new syndrome in L5-S1 disc herniation: Sexual and sphincter dysfunction without pain and muscle weakness. J Craniovertebr Junction Spine 2014;5:146-50.

15. Ahmed A, Kang A, Hyung-Joon J. Fluoroscopically guided interlaminar needle for lumbar disc herniation: A series of 43 patients. Ann Saudi Med 2019;39:417-21.

16. Sahrah H, Mansour M, Elhussein N, Ahmed R, Alzahrani A. Disc prolapse awareness among population in taif- Saudi Arabia. Int J Adv Res 2016;4:188-97.

17. Alshehri A, Alshehri T, Alyali S, Alshahrani A, Alshehri S. Awareness of disc herniation among general population in Aseer province, Saudi Arabia. J Fam Med Prim Care 2019;8:115963.