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Research Article

Knowledge, Attitudes and Practices regarding Abdominal Wall Hernias Among Saudi Population in Jeddah City, Saudi Arabia

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Abstract

Background: Hernia is defined as the protrusion of an organ or tissue through an abdominal muscle's ordinary opening, and the prevalence of hernias in Saudi Arabia is rising. The objective is to evaluate the knowledge and awareness of abdominal hernias among the general population of Saudi Arabia.
Methods: A descriptive cross-sectional questionnaire-based methodology was used in Jeddah city, Saudi Arabia, from October 1 to May 31, 2023, with a minimum sample size of 385. Data was analyzed using SPSS. The study involved 482 male and female participants aged 18-65. Individuals who had hernias and their relatives were excluded.A structured questionnaire was developed after consulting relevant studies conducted in Saudi Arabia and translated into Arabic. Data collectors used Google Forms to gather information from Jeddah's citizens through social media.
Results: Awareness varied among participants: 73.9% correctly associated hernias with carrying heavy weights, while only 4.6% knew that hernias could be hereditary. Additionally, 38.4% identified direct injury as a cause of hernias, and 55.2% mentioned that excess weight can lead to hernias. Knowledge levels varied significantly by age and education. Participants aged 18-25 had a median score of 14.0 (IQR: 10.0-18.0), significantly higher than other age groups ($p = 0.011$). Elementary education exhibited a median score of 21.0 (IQR: 21.0-21.0), higher than those with other educational backgrounds ($p = 0.012$).
Conclusion: While some participants demonstrated a good understanding of hernia risk factors and etiology, notable misconceptions and gaps in knowledge persist. These findings highlight the importance of targeted educational initiatives to improve public awareness of hernias.

INTRODUCTION

When an organ or fatty tissue forces its path through a weak spot in the muscle or connective tissue called fascia, this can cause a hernia, defined as the protrusion of an organ or tissue through an abdominal muscle's ordinary opening (Judia, 2018). Although hernias can occur in various forms, they are predominantly associated with the abdominal area, with nearly 75% of all cases being located in the inguinal region. (Mahfouz et al., 2020). Inguinal hernia is well-known for being a widespread disease affecting the male popula-

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tion. There are two subtypes of inguinal hernia: direct and indirect. These subtypes account for 24 and 50 percent of all types of hernia, respectively (Idris Qureshi, 2019). Even though inguinal hernias should be repaired electively to avoid complications, delayed diagnosis or repair of inguinal hernias frequently results in incarceration, which is defined as the hernia being incapable of being reduced. Incarcerated inguinal hernias tend to be the most frequent cause of acute abdominal pain. Approximately five percent to fifteen percent of patients diagnosed with Incarcerated inguinal hernias will need emergency surgery due to bowel incarceration or bowel strangulation, which is defined as objective evidence of ischemia (Chen et al., 2020). Kingsnorth et al. The number of hernias repaired annually is almost 20 million. Among the Saudi population, in 2020, hernia prevalence was 38.3%; they used a sample of 500 adults (Mahfouz Al-Juaid, 2021). A study conducted in 2020 in Al Qassim, Saudi Arabia, involving 446 adult participants, concluded that knowledge about hernias did not significantly vary between genders . However, individuals aged 22–28 years demon strated greater awareness, which also appeared to correlate positively with higher education levels. The most commonly recognized risk factor among participants was lifting heavy weights, while other risk factors remained largely unknown. Consequently, the study emphasizes the need for enhanced educational programs to improve awareness of risk factors associated with abdominal hernias (Assakran et al., 2020).

Moreover a 2023 study conducted in the western region of Saudi Arabia, involving 1,570 participants, revealed that only 13% demonstrated good overall knowledge about hernias, while 31% exhibited poor knowledge, and 56% had moderate knowledge. Concerningly, 55% of participants displayed a poor attitude toward hernias, and 27% were found to have inadequate practices related to the condition. (Bahareth et al., 2023). However, another study done in Riyadh city in 2018 mentioned that among 100 participants, they showed insufficient knowledge of predisposing risk factors that could lead to a hernia, as 36% of them could relate smoking, DM, chronic coughing, and constipation as risk factors for hernia (Alsomali, 2018). Additionally, a systematic review study on managing hernias also mentioned the importance of preoperative knowledge, which may differ in the strategy and overall success of care. According to this study, management outcomes may be affected if patients avoid specific risk factors (Lozada-Martinez et al., 2022). Moreover, in a study comprising 916 people who had primary or recurrent inguinal hernias corrected, the reasons for price increases were investigated. However, it was discovered that early elective schooling is supported by costeffective factors including numerous morbidities, advanced age, and emergencies (Aydin et al., 2021). According to recent studies, other regions in the Kingdom of Saudi Arabia have yet to assess their population knowledge and awareness of hernia causes, including Jeddah city. Also, most studies suggest further evaluation of knowledge and awareness. Therefore, it is crucial to assess the causes of hernia in the Saudi Arabia region as hernia could lead to life-threatening conditions.

MATERIALS AND METHODS

Statistical Analysis

Inferential and Descriptive statistical analyses of the data were performed. Frequencies and percentages have been estimated and tabulated as basic descriptive statistics of the sociodemographic traits and other categorical variables. Due to the relatively nonnormal distribution of the variables as determined by the Kolmogorov-Smirnov Test (p0.001), medians and IQRs (interquartile ranges) have been reported as indicators of central tendency and dispersion, respectively, for continuous variables.

Each correct answer to the 28 questions measuring participants' knowledge and awareness of hernias was given a score of 1, which was added up to determine each participant's overall knowledge score. Consequently, a participant's possible overall score varied from 0 to 28. The results were compared between individuals who had different sociodemographic traits. Inferential statistical analysis was used for the comparison, specifically the Kruskal-Walli's test and the nonparametric Mann-Whitney U Test. A p-value of 0.05 was used to determine significance and indicate a 95% confidence interval. IBM SPSS software version 27.0.1 was used for all statistical calculations

RESULTS

Sociodemographic Characteristics

There was a total of 514 participants, however, only 482 met the inclusion criteria and were included in the analysis. Based on the gender breakdown, there is a slightly greater proportion of females (58.9%) than males (41.1%). In terms of age, Regarding educational levels, a substantial majority hold a Bachelor's degree (70.1%), In terms of employment, participants exhibit diverse job statuses, with 40.9% being students, The income distribution shows that Almost 50% of the participants (46.9%) earn less than 5000 SAR, while 46.1% report incomes ranging from 5000 to 25000 SAR, Marital status reveals that The majority of participants are either married (45.0%) or single (51.9%).

Regarding smoking habits, a significant proportion of participants identify as non-smokers (81.3%), while 13.3% are smokers, and 5.4% are ex-smokers. In terms of daily activity levels, participants vary in their physical engagement, with 31.7% engaging in more than 150 minutes of activity per week, 45.6% engaging in less than 150 minutes a week, and 22.6% being inactive. (Table 1)

Table 1: Sociodemographic Characteristics of the Participants (N=482)

	Count	Table %	
Gender	Female	284	58.9%
	Male	198	41.1%
Age	18-25	221	45.9%
	26-35	74	15.4%
	36-45	99	20.5%
	46-65	88	18.3%
Educational Level	Bachelor's	338	70.1%
	Elementary School	1	0.2%
	High School	103	21.4%
	Illiterate	9	1.9%
	Middle School	6	1.2%
	Post Graduate	25	5.2%
Job Status	Government Employee	128	26.6%
	Private Employee	74	15.4%
	Retired	37	7.7%
	Student	197	40.9%
	Unemployed	46	9.5%
Income	Between 5 - 25000	222	46.1%
	Less Than 5000	226	46.9%
	More Than 25000	34	7.1%
Marital Status	Divorced	14	2.9%
	Married	217	45.0%
	Single	250	51.9%
	Widow	1	0.2%
Smoking	Non-Smoker	392	81.3%
	Smoker	64	13.3%
	Ex-Smoker	26	5.4%
Daily Activity	Inactive	109	22.6%
	Less Than 150min A Week	220	45.6%
	More Than 150min A Week	153	31.7%
Are You Residing In Jeddah?	Yes	482	100.0%
Have You Or Anyone In Your Family Had A Hernia?	No	482	100.0%

Table 2: Participants Knowledge of Risk Factors of Hernia

	Correct Answer	Percentage of Correct Responses	
		Count	Table %
Is hernia a hereditary disease?	Yes	22	4.6%
Is the hernia related to carrying heavy weights?	Yes	356	73.9%
Does asthma increase the possibility of hernia disease?	Yes	118	24.5%
Is hernia related to chronic constipation?	Yes	198	41.1%
Is hernia related to smoking?	Yes	83	17.2%
Do patients with an enlarged prostate have a higher risk of hernia?	Yes	120	24.9%
Do pregnant women have a greater chance of having a hernia?	Yes	260	53.9%
Do you think the hernia is the result of surgery?	Yes	140	29.0%
Do diabetics have a greater chance of developing a hernia?	Yes	82	17.0%
Are females more prone to hernia than males?	No	74	15.4%
Does colon cancer cause hernia?	No	66	13.7%

Risk Factors of Hernia

(Table 2) includes eleven questions, each probing a specific aspect of hernia risk factors, along with the corresponding percentage of correct answers.

The results highlight varying levels of awareness among the participants. When asked whether hernia

is hereditary, only a small percentage (4.6%) correctly responded that it may be a hereditary condition. However, the majority (73.9%) correctly identified that hernias are related to carrying heavy weights, indicating a good understanding of this risk factor.

Regarding asthma and smoking as a potential risk factor, 24.5% and 17.2% of participants recognized its association with hernia. Moreover, 41.1% correctly associated hernias with chronic constipation. Furthermore, (53.9%) correctly identified that the risk of developing a hernia is higher in pregnant women. Surprisingly, 71.0% of participants could not associate surgery as a risk factor for hernia .

Etiology of Hernia

According to Table 3, 50.8% correctly understood that hernia risk increases with aging. On the other hand, 38.6% correctly recognized that cycling doesn't elevate hernia risk. Additionally, 57.7% correctly disagreed that infertility is a cause of hernias, however, 38.4% correctly identified that direct injury can cause hernias. Finally, 55.2% linked excess weight with hernia. These findings reflect the participants' varying levels of accurate knowledge regarding hernia etiology. (Table 3)

Awareness of Hernia

As shown in Table 4, a substantial percentage recognized that hernias typically require surgical intervention (72.2%). In addition to that, there are preventive measures for hernias (78.8%). Interestingly, most participants believed that hernias could occur after treatment (59.5%). However, there were some misconceptions, as nearly half of the respondents incorrectly thought that hernias could lead to death directly (48.1%). This data highlights the areas of solid awareness and the misconceptions among the surveyed population regarding hernias and their management. (Table 4)

DISCUSSION

The analysis of sociodemographic characteristics among the 482 participants in this study reveals several worthy findings. The study's participants are slightly skewed towards females demonstrating the sample's gender imbalance. Most participants fall within the age group of 18-25 years, suggesting that this age group is well-represented in the study. A substantial 70.1% of participants hold Bachelor's degrees, indicating a highly educated sample. Participants have diverse employment statuses, with the largest group being students (40.9%). The income distribution reveals income variability among the participants. A significant proportion of participants (81.3%) do not smoke. Participants vary in their physical activity levels, which highlights diversity in physical activity behaviors . All participants reside in Jeddah, and none of them or their family members report a history of hernia, indicating the geographical focus of the study and the absence of a relevant medical history in the sample.

Regarding hernia risk factors, there seems to be limited awareness of the hereditary aspect of hernia, with only 4.6% correctly acknowledging it. This low level of recognition matches with previous research by (Burchart et al. 2013) which also found a lack of awareness regarding the hereditary nature of hernia. On the other hand, the participants showed a higher level of understanding when it came to recognizing heavy lifting as a risk factor, with 73.9% correctly identifying it. According to (Mehrdad et al. 2013), there was a high level of awareness regarding the connection between hernias and heavy lifting, which is supporting the findings of this study. In terms of other risk factors, awareness varied. While 24.5% correctly associated hernia with asthma and 41.1% with chronic constipation, only 17.2% made the connection with smoking. This suggests a potential gap in knowledge that could be addressed through educational initiatives, as seen in the study by (DeLancy et al. 2018) where improved awareness campaigns positively impacted knowledge of smoking-related health risks.

Interestingly, a half of the participants (53.9%) recognized the higher hernia risk in pregnant women, highlighting a reasonable understanding of this specific risk factor. Similarly, 29.0% correctly acknowledged that surgery can be a risk factor for hernia, which is consistent with findings in the study by (Ahmed Alenzai et al. 2017) on postoperative hernia risks. However, the results also revealed some misconceptions, such as the belief that females are more prone to hernia than males (15.4% correct) and the misconception that colon cancer directly causes hernia (13.7% correct). These misconceptions are consistent with the need for accurate health education, as emphasized by (Pivo et al. 2023) in their study on health literacy and misconceptions related to medical conditions.

Regarding the etiology of hernias. A substantial majority (66.4%) correctly acknowledged that hernias can have specific causes. This finding address the importance of recognizing specific causes in hernia education and prevention (Shakil et al., 2020). Furthermore, half of the participants (50.8%) correctly understood that hernia risk increases with age, showing a reasonable grasp of this risk factor. Similarly, the findings of a study by (Kibret et al. 2022) considered age as a significant contributor to hernia development. Only 38.6% correctly recognized that cycling doesn't elevate hernia risk, and 48.8% accurately believed that specific foods are not causative factors for hernias. These findings highlight potential misconceptions in the participants' understanding of hernia causes and could benefit from clarification through educational campaigns.

Moreover, a majority (57.7%) correctly disagreed that infertility is a cause of hernias, which suggests a generally accurate understanding of this aspect. Similarly, 55.2% correctly responded that excess weight can lead

Table 3: Participants Knowledge of Etiology of Hernia

	Correct Answer	**Percentage of Correct Responses**	
		Count	Table N %
Do you think there is a specific cause of hernia?	Yes	320	66.4%
Does the possibility of a hernia increase with age?	Yes	245	50.8%
Do you think cycling increases the risk of a hernia?	No	186	38.6%
Do you think there are certain foods that cause hernias?	No	235	48.8%
Is infertility a cause of hernia?	No	278	57.7%
Does a direct injury cause a hernia?	Yes	185	38.4%
Does excess weight cause hernia?	Yes	266	55.2%

Table 4: Participants Awareness of Hernia

	Correct Answer	**Percentage of Correct Responses**	
		Count	Table %
Can a person get hernia multiple times?	Yes	326	67.6%
Are there complications of hernia?	Yes	366	75.9%
Are the different types of surgeries for hernia?	Yes	285	59.1%
Can a hernia be treated without surgical intervention?	No	157	32.6%
Are there different types of hernia?	Yes	286	59.3%
Are there symptoms of hernia?	Yes	380	78.8%
Is hernia treated without any intervention?	No	243	50.4%
Are there preventive measures for hernia?	Yes	348	72.2%
Can a person get hernia after treatment?	Yes	287	59.5%
Does hernia lead to death directly?	No	232	48.1%

to hernias, indicating awareness of obesity as a risk factor. Moreover, the importance of addressing lifestyle-related factors in hernia awareness campaigns is essential (Shrestha Upadhyay, 2021). However, there is room for improvement in recognizing direct injury as a cause of hernias, as only 38.4% answered correctly. This finding underestimated the need for increased awareness of traumatic factors in hernia development, as discussed in the study by (Brown et al. 2013) on sports-related hernias.

A mixture of accurate awareness and misconceptions were found among the participants regarding hernias and their management. According to a study on hernia recurrence awareness by (Ah-Kee et al. 2014), there is a solid comprehension of hernia recurrence. Similarly, 67.6% of survey participants accurately acknowledged that hernias could recur. Furthermore, a significant percentage (75.9%) recognized that complications can be associated with hernias, demonstrating awareness of the potential risks involved. This aligns with a study by (Kockerling et al. 2019) on hernia complications awareness. In addition, 59.1% correctly believed that various surgical treatments are available for hernias, showing knowledge of treatment options. This is consistent with research results by (Dingeldein et al. 2018) on hernia treatment awareness.

Further highlighting the significance of prompt medical assistance, a significant portion (72.2%) accurately recognized that hernias usually necessitate surgical intervention. Also, the findings of a related study on hernia management awareness carried out by North et al. (2014) are consistent with this. It is worth noting that 78.8% recognized the existence of preventive measures for hernias, supporting a proactive approach to hernia prevention among participants. It is also represented in a study by (Tam et al. 2010) on preventive strategies for hernias. Nearly half of the respondents (48.1%) incorrectly thought that hernias could lead to death directly, which is not typically the case. This misconception highlights the need for clear and accurate information dissemination regarding hernia risks. Additionally, 50.4% of participants were unaware that hernias are not typically treated without any intervention, indicating a potential gap in understanding the necessity of treatment. This area of awareness could benefit from targeted education campaigns, as demonstrated in a study by (Lichtenstein et al. 1976) on hernia treatment misconceptions.

Table 5: Association of Knowledge and Awareness of Hernia with Sociodemographic Characteristics

		Total Score		
		Median	IQR	P value U,K
Gender	Female	13.5	10.0-17.0	0.640
	Male	13.0	8.0-17.0	
Age	18-25	14.0	10.0-18.0	0.011*
	26-35	13.0	7.0-16.0	
	36-45	13.0	8.0-16.0	
	46-65	12.0	9.0-17.0	
Educational Level	Bachelor's	13.0	9.0-17.0	0.012*
	Elementary School	21.0	21.0-21.0	
	High School	13.0	9.0-16.0	
	Illiterate	20.0	15.0-20.0	
	Middle School	17.5	12.0-20.0	
	Post-Graduate	16.0	13.0-18.0	
Job Status	Government Employee	12.5	8.0-16.0	0.069
	Private Employee	12.5	9.0-15.0	
	Retired	12.0	7.0-17.0	
	Student	14.0	11.0-18.0	
	Unemployed	14.0	9.0-16.0	
Income	Between 5 - 25000	12.0	8.0-16.0	<0.001*
	Less Than 5000	14.0	10.0-17.0	
	More Than 25000	19.0	14.0-20.0	
Marital Status	Divorced	11.0	7.0-16.0	0.008*
	Married	12.0	8.0-16.0	
	Single	14.0	11.0-17.0	
	Widow	18.0	18.0-18.0	
Smoking	Non-Smoker	13.0	10.0-17.0	0.225
	Smoker	12.5	8.0-16.0	
	Ex-Smoker	13.0	8.0-16.0	
Daily Activity	Inactive	14.0	9.0-18.0	0.181
	Less Than 150 min A Week	13.0	8.0-17.0	
	More Than 150 min A Week	14.0	11.0-17.0	
Overall Score	13.0	9.0-17.0		

UIndependent Samples Mann-Whitney U Test
KIndependent Samples Kruskal-Wallis Test
*p<0.05, Significant

Age plays a pivotal role, with participants aged 18-25 exhibiting higher knowledge and awareness scores than other age groups. This finding emphasizes the importance of ageappropriate educational initiatives for hernia awareness. Education level also emerges as a critical determinant, with participants who have received an Elementary education displaying higher scores than their counterparts. This underestimated the role of education in improving hernia knowledge and highlights the need for tailored educational materials to reach diverse educational backgrounds. Marital status demonstrates significance, as divorced participants exhibit lower scores compared to married and single individuals. This suggests that marital status may influence access to and retention of hernia-related information.

Income levels have a substantial impact, with higher earners demonstrating higher scores. This implies that people who have more financial resources may have better access to healthcare information. Factors like job status, smoking habits, and daily activity do not show significant associations with knowledge and awareness scores, showing that these variables may have a limited impact on hernia awareness levels. These findings underline the multifaceted nature of factors affecting hernia knowledge and call for tailored awareness campaigns that consider the diversity in sociodemographic backgrounds to enhance hernia awareness among different segments of the population.

Despite this study providing insightful information, there are a few important limitations that should be noted. Firstly, the data was collected through a cross-sectional questionnaire-based approach, which inherently carries the risk of recall bias and may not capture longitudinal changes in knowledge and awareness. Secondly, the study focused exclusively on Jeddah city population in Saudi Arabia, limiting the generalizability of findings to other regions or countries. Additionally, the reliance on self-reported information regarding risk factors and awareness introduces the potential for response bias .

LIMITATION

Among the drawbacks of this study was its reliance on a self-reported questionnaire to gauge the prevalence of hernias, which prevented it from providing a comprehensive picture of participants' knowledge. Additionally, this study did not investigate the information sources that might have been connected to some participants' arbitrary responses.

Therefore, determining the prevalence of hernias will be more accurate with additional qualitative research.

CONCLUSION AND RECOMMENDATION

Some participants demonstrated a good understanding of hernia risk factors and etiology , but there were marked misconceptions and gaps in knowledge. These findings underestimate the importance of targeted educational initiatives to improve public awareness of hernias, especially among vulnerable groups. Ultimately, enhancing knowledge about hernias and their risk factors can lead to better prevention, early diagnosis, and management of this common medical condition, reducing the burden on healthcare systems and improving overall public health.

AUTHOR CONTRIBUTION

A uthor 1 : Concepts, Literature search, data collection, Manuscript; preparation, review editing ; A uthor 2 : Literature search, data collection, Manuscript; preparation, review, editing ; A uthor 3 : Concepts, Literature search, data collection, Manuscript; preparation, review, editing ; A uthor 4 : Literature search, data collection, Data analysis, Statistical analysis, Preparation; Tables, Figures. Manuscript; review ; A author 5 : Literature search, Data analysis, Statistical analysis, Preparation; Tables, Figures. Manuscript; review ; A uthor 6 : Literature search, data collection, Manuscript; preparation, review, editing ; A uthor 7 : supervision, Manuscript; preparation, review, editing.

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