



Research Article

# Knowledge and Attitude towards Hernia among Adults in Al-Qunfudhah, Saudi Arabia; A Cross-Sectional Community-Based Study

Safa H. Alkalash<sup>1,2\*</sup>, Mosad M. Odah<sup>3,4</sup>, Fuad M. Alkudaysi<sup>5</sup>, Hassan I. Alnashri<sup>5</sup>, Mohammed Y. Alsayed<sup>5</sup>, Ali H. Almuntashiri<sup>5</sup>, Awad A. Alessi<sup>5</sup>, Turki M. Alhasani<sup>5</sup>, Ali A. Alghanmi<sup>5</sup>, Abdulrahman A. Almarhabi<sup>5</sup>, Turki A. Almahdawi<sup>5</sup>, Meshari S. Almahdawi<sup>5</sup>, Ibrahim H. Alnashri<sup>5</sup>, Khalid H. Almahmudi<sup>5</sup>

<sup>1</sup>Department of Community Medicine and Health care, Faculty of Medicine, Umm Al-Qura University, Al-Qunfudhah city, 28013, KSA

<sup>2</sup>Department of Family Medicine, Faculty of Medicine, Menoufia University, Menoufia Governorate, Shebeen Alkom city, 32511, Egypt

<sup>3</sup>Department of Biochemistry, Al-Qunfudah Faculty of Medicine, Umm Al-Qura University, Al-Qunfudhah city, 28013, KSA

<sup>4</sup>Department of Biochemistry, Benha Faculty of Medicine, Benha University, Egypt

<sup>5</sup>Medicine and Surgery, Umm Al-Qura University · Al-Qunfudah, 28013, KSA

\*Corresponding author: Safa Hamdy Alkalash, Department of Community Medicine and Health care, Faculty of Medicine, Umm Al-Qura University, Al-Qunfudhah city, 28013, KSA and Department of Family Medicine, Faculty of Medicine, Menoufia University, Menoufia Governorate, Shebeen Alkom city, 32511, Egypt

**Citation:** H. Alkalash S, M. Odah M, M. Alkudaysi F, I. Alnashri H, Y. Alsayed M, et al. (2022) Knowledge and Attitude towards Hernia among Adults in Al-Qunfudhah, Saudi Arabia; A Cross-Sectional Community-Based Study. Ann Case Report. 7: 1054. DOI: 10.29011/2574-7754.101054

**Received Date:** 17 November 2022; **Accepted Date:** 21 November 2022; **Published Date:** 23 November 2022

## Abstract

**Background:** A hernia is a medical disorder that occurs when an organ or tissue protrudes abnormally throughout a defect in the surrounding walls. Among abdominal wall hernias, the inguinal region is the most common location for these defects. Heavy lifting weights, obesity, pregnancy, and constipation are major risk factors for a hernia. Objectives: were to assess the level of knowledge and attitudes towards hernia among adults in Al-Qunfudhah governorate. **Participants and Methods:** A cross-sectional community-based study was conducted on a simple random sample of adults aged 18 years and more in Al-Qunfudhah governorate. The data collection was done via a validated self-administered an online questionnaire preceded by consent and insured to maintain confidentiality of the participants' data. **Results:** The study recruited 402 participants, 55.7% of them were males, and 66.7% were aged 18-29 years. About two thirds of the sample (64.9%) were single and university educated (64.4%). Of all participants, 4.2% self-reported having a hernia. Overall, of participants, only 33.8% had good knowledge about hernia. While positive attitude was the predominant 74.6% among respondents. **Conclusion:** Knowledge levels about hernia in the current study were poor. There was an association between having good knowledge about hernias and being younger, unmarried, and a student. The research population's attitudes were good, and only being a student was associated with a more favourable attitude regarding hernia diagnosis and treatment.

**Keywords:** Adult; Al-Qunfudhah; Attitude; Hernia; Inguinal; Knowledge; Saudi Arabia

## Introduction

Inguinal hernia was recorded for the first time around 1500 BC in ancient Egypt [1]. Hernia is a Latin word in origin that means rupture. It occurs when an organ or tissue protrudes abnormally through a dehiscence in the surrounding walls. The abdominal wall hernia, especially the inguinal region, is the most common type [2]. Inguinal hernias are very frequent among men, which account 75% of abdominal wall hernias, with a lifetime risk of 27% for men and 3% for women [3]. Other common sites of abdominal wall hernias include groin, umbilicus, Linea Alba, semilunar line of Spiegel, diaphragm, and surgical incisions [4]. It is estimated that more than 20 million hernias are repaired each year worldwide [5].

The causes of hernia development are related to muscle weakness and strains. Chronic coughing and damage from surgery or trauma are common causes of hernia development [5]. Heavy lifting weights, obesity, pregnancy, and constipation are major risk factors for hernia [6]. Smoking in particular shown to be a significant risk factor especially in the inguinal hernia [7, 8]. Collagen vascular disease, intra-abdominal pressure, and history of open appendectomy also relatively a risk factors for inguinal hernia [9, 10].

Abdominal wall hernias are mostly asymptomatic, however, the symptoms may include groin swelling, heavy feeling in the abdomen, and discomfort in the abdomen regions, especially when coughing, lifting, or bending over [5].

Reducible hernias are those can be reduced back to their normal position, while incarcerated hernias cannot be reduced. The hernia is called strangulated when the blood supply to its contents is compromised. Large hernias through small orifices and the adhesions that form between hernia content and the peritoneal lining of the sac, both are carrying a great risk of strangulation. If not recognized and treated promptly, mortality may be as high as 30% [11].

Studies on knowledge of hernia predisposing factors are limited in Saudi Arabia; however, one study indicates the lack of public knowledge about hernia risk factors among Saudi adults in Riyadh [7]. Furthermore, 52% of Saudi adults in Riyadh had a knowledge score of less than 5 out of 10 about hernia risk factors [7], while 38% of Saudi adults in Al-jouf had very good knowledge [12].

Due to the lack of studies about hernia among population in Al-Qunfudhah, Saudi Arabia, therefore this study was performed in order to evaluate knowledge and attitudes toward hernia among adults in Al-Qunfudhah governorate in Saudi Arabia.

## Materials and Methods

### Study design

A descriptive cross-sectional community-based study was executed among adults aged 18 and above in Al-Qunfudhah governorate, Saudi Arabia during the period between August 2021 to October 2022.

The study population included male and female adults aged 18 years and above who lived in Al-Qunfudhah governorate and agreed to participate in this study voluntarily, after being assured that all data would be collected anonymously.

**Sample size:** The sample size was calculated to be 375 by considering a margin of error of 5%, and a 95% confidence interval, calculated by Raosoft calculator. However, the data collectors received a total of 402 valid responses.

### Study setting

**Study setting:** Al-Qunfudhah district is located in the Tihamah region on the Red Sea coast. Its population size is 300516 representing the fourth largest in Makkah Province. Its area is estimated at 5,195 km<sup>2</sup>, which occupies about 3.7% of the regional area. It is considered one of the largest sea ports of the Kingdom of Saudi Arabia on the Red Sea. Al Qunfudhah was discovered in 1311 A.C-709 Hijri according to the ancient sources.

### Data collection

The data collection was performed in a duration of four months starting from the beginning of October 2021 to the end of January 2022 through a pretested, semi-structured online questionnaire. The study survey was developed by the study researchers in Arabic language from the literature and the two experts' opinions.

The validity of the questionnaire was confirmed through a pilot study of a sample of 40 participants to test the validity of the questionnaire and to estimate the time needed for each participant to complete the questionnaire, and the data were not included into final study.

### Tools for data collection

The questionnaire was subdivided into three sections; the first section was about demographic information of the participants like age, gender, weight, height, nationality, education.

The second section was evaluating the participants' knowledge about hernia such as hernia definition, causes, its risk factors, and its complication.

Finally, the third section was assessing individuals' attitudes towards hernia diagnosis and management.

The knowledge about hernia was reported as poor when the participant replied correctly to 50% or less and good when scored more than 50%.

Attitude score of 50% or less was considered negative while more than 50% was positive one.

The online survey was designed on a Google form and distributed using different social media platforms.

Before starting collection of the main study data, a pilot study had been done among 10% of the study sample (45 participants) who were particular from the same study location for estimating the clarity and applicability of the study tools, and recognize the obstacles that may face data collection, and possible actions to overcome. All obtained data from pilot study were not included in the main study results.

### Statistical analysis

Data were entered through Excel 2016 and all data analyses were performed by using Statistical Package for Social Sciences

(SPSS) software, version 26. Descriptive analysis was performed, and categorical data were presented as frequencies and percentages. Inferential statistics were performed using Pearson's Chi-square test. A value of  $P < 0.05$  was considered statistically significant.

### Ethical considerations

Ethical approval was sought from Umm Al-Qura IRB NO. (HAPO-02-K-012-2021-08-709). Consent was obtained from all participants before questionnaire filling. No personal identifying data were collected from participants and all data were coded and handled carefully to ensure its safety.

### Results

The study included a total of 402 participants, 55.7% of them were males, and 66.7% were aged 18-29 years. Half of the participants (50.0%) had a normal body mass index (BMI), whereas 21.6% were overweight, and 12.7% were obese. About two thirds of the study sample (64.9%) were single and university educated (64.4%). Out of all participants, 4.2% self-reported as having a hernia (Table 1).

Parameter	Frequency	
	N (402)	(%)
Age, y	18 to 29	268 (66.7%)
	30 to 39	58 (14.4%)
	40 to 57	76 (18.9%)
BMI	Underweight	63 (15.7%)
	Normal	201 (50.0%)
	Overweight	87 (21.6%)
	Obese	51 (12.7%)
Sex	Male	224 (55.7%)
	Female	178 (44.3%)
Nationality	Saudi	393 (97.8%)
	Non-Saudi	9 (2.2%)

<b>Residency</b>	Al-Qunfudah	229	(57.0%)
	Al-Qouz	90	(22.4%)
	Haly	35	(8.7%)
	Almuzaylif	20	(5.0%)
	Al Ardiyat	16	(4.0%)
	Doga	4	(1.0%)
	Ahad Bani-Zayd	6	(1.5%)
	Khamis Harb	2	(0.5%)
<b>Marital status</b>	Single	261	(64.9%)
	Married	134	(33.3%)
	Divorced	7	(1.7%)
<b>Occupational status</b>	Student	218	(54.2%)
	Unemployed	54	(13.4%)
	Employee	130	(32.3%)
<b>Educational level</b>	Primary	2	(0.5%)
	Intermediate	5	(1.2%)
	Diploma	24	(6.0%)
	Secondary	90	(22.4%)
	Bachelor's degree	259	(64.4%)
	Maser degree	13	(3.2%)
	Ph. D	9	(2.2%)
<b>Being diagnosed previously with a hernia</b>	Yes	17	(4.2%)
	No	373	(92.8%)
	Don't know	12	(3.0%)

**Table 1:** Sociodemographic characters of participants.

Table 2 shows the responses to knowledge items. Most respondents (82.8%) recognized that hernia was defined as abdominal prominence due to weakness that is caused by hard/manual work (76.6%), as well as hereditary aetiology (17.4%). Respondents were aware that hernia is predisposed by heavy lifting (84.3%), pregnancy (55.2%), previous surgery (50.5%), constipation (45%), old age (35.1%), enlarged prostate (31.6%), bronchial asthma (25.6%), smoking (20.5%), diabetes mellitus (16.7%) and riding a bicycle (11.4%).

Parameter	Frequency	
	N (402)	(%)
<b>Definition of hernia</b>	Abdominal prominence due to weakness	333 (82.8%)
	Inflammation of the abdomen	33 (8.2%)
	Don't know	36 (9.0%)
<b>Cause of the hernia</b>	Spiritual/curse/witchcraft	18 (4.5%)
	Hereditary	70 (17.4%)
	Hard/manual work	308 (76.6%)
	Cause is not known	62 (15.4%)
	Don't know	38 (9.5%)
	<b>Asthmatic patient has a high chance to develop a hernia</b>	
Yes	103 (25.6%)	
No	144 (35.8%)	
Don't know	155 (38.6%)	
<b>Hernia is related to heavy lifting</b>	Yes	339 (84.3%)
	No	33 (8.2%)
	Don't know	30 (7.5%)
<b>Hernia is related to constipation</b>	Yes	181 (45.0%)
	No	71 (17.7%)
	Don't know	150 (37.3%)
<b>Hernia is related to smoking</b>	Yes	82 (20.5%)
	No	139 (34.8%)
	Don't know	179 (44.8%)
<b>Hernia is related to enlarged prostate</b>	Yes	127 (31.6%)
	No	60 (14.9%)
	Don't know	215 (53.5%)
<b>Pregnancy and labour have a high chance to develop a hernia</b>	Yes	222 (55.2%)
	No	80 (19.9%)
	Don't know	100 (24.9%)
<b>Hernia is related to surgery</b>	Yes	203 (50.5%)
	No	67 (16.7%)
	Don't know	132 (32.8%)
<b>Diabetes Mellitus patients have a high chance to develop a hernia</b>	Yes	67 (16.7%)
	No	133 (33.1%)
	Don't know	202 (50.2%)

<b>Specific food/drink can cause a hernia</b>	Yes	40	(10.0%)
	No	212	(52.7%)
	Don't know	150	(37.3%)
<b>Riding bicycles can cause a hernia</b>	Yes	46	(11.4%)
	No	198	(49.3%)
	Don't know	158	(39.3%)
<b>Aging increase the chance of hernia occurrence</b>	Yes	141	(35.1%)
	No	118	(29.4%)
	Don't know	143	(35.5%)
<b>Sterility may be associated with hernia</b>	Yes	44	(10.9%)
	No	178	(44.3%)
	Don't know	180	(44.8%)
<b>Hernia can cause death</b>	Yes	58	(14.4%)
	No	171	(42.5%)
	Don't know	173	(43.0%)

BMI = Body Mass Index, Ph. D= A Doctor of Philosophy

**Table 2:** Hernia knowledge and misconception items among participants.

The attitude of participants towards hernia diagnosis and treatment was illustrated in Table 3. Over half of participants (56.7%) consider hernia as a serious disease, whereas 84.1% decided that it is curable. Seeing the doctor on the same day was the favorable action on suspecting having a hernia by 76.9% of respondents. Reasons for seeing the doctor were pain (79.6%), disturbing size (60.9%), and stigmatization (9.5%), as reported by participants.

Parameter	Frequency	
	N (402)	(%)
<b>Hernia is a serious disease</b>	Yes	228 (56.7%)
	No	117 (29.1%)
	Don't know	57 (14.2%)
<b>Hernia is a curable disease</b>	Yes	338 (84.1%)
	No	11 (2.7%)
	Don't know	53 (13.2%)
<b>Actions when someone has hernia</b>	Inform a close relative	93 (23.1%)
	Inform the priest/pastor	337 (83.8%)
	Seek spiritual intervention	18 (4.5%)
	Observe for a while	75 (18.7%)
	See the doctor the same day	309 (76.9%)
	Hide it as a protected secret	12 (3.0%)
	Inform the doctor only if the hernia is painful	109 (27.1%)
	Use herbs before reporting to the doctor	11 (2.7%)
<b>Time to seek medical advice in case of lump in groin</b>	After three months	14 (3.5%)
	Within one to three months	27 (6.7%)
	Within one month	170 (42.3%)
	Any time when become free	140 (34.8%)
	When be able to make some time	51 (12.7%)
<b>Person who could effectively manage hernia</b>	Spiritual pastor /spiritual intervention	21 (5.2%)
	Herbalist/ traditional doctor	42 (10.4%)
	Specialist doctor	381 (94.8%)
<b>Reasons for seeing the doctor</b>	Pains	320 (79.6%)
	Disturbing size	245 (60.9%)
	Stigmatization	38 (9.5%)
<b>Preferred treatment option</b>	Take medicines that will make the hernia go	189 (47.0%)
	Perform a surgical operation	213 (53.0%)

**Table 3:** Attitude towards hernia diagnosis and treatment among participants.

Table 4 shows that only 33.8% of participants had good knowledge (>50%) compared to 66.2% who had poor knowledge. Interestingly, the table also shows that 74.6% of respondents had a positive attitude (>50%).

Item	Mean ± SD/ n	%
<b>Knowledge score (Mean ± SD)</b>	41.28 ± 16.49	
· <b>Good knowledge</b>	136	(33.8%)
· <b>Poor knowledge</b>	266	(66.2%)
<b>Attitude score (Mean ± SD)</b>	58.68 ± 13.56	
· <b>Positive attitude</b>	300	(74.6%)
· <b>Negative attitude</b>	102	(25.4%)

**Table 4:** Hernia knowledge and attitude scores among participants (n=402).

As shown in Table 5, good knowledge was significantly viewed among younger subjects aged 18 to 29 years (38.4%), who were single (38.3%), and students (40.4%), where an inferential analysis revealed a significant association of these characters with knowledge level (P = 0.003, 0.029, and 0.006, respectively).

Parameter		Knowledge score				P-value
		Good knowledge		Poor knowledge		
		N	%	N	%	
<b>Age, y</b>	18 to 29	103	(38.4%)	165	(61.6%)	0.003*
	30 to 39	9	(15.5%)	49	(84.5%)	
	40 to 57	24	(31.6%)	52	(68.4%)	
<b>BMI</b>	Underweight	23	(36.5%)	40	(63.5%)	0.951
	Normal	68	(33.8%)	133	(66.2%)	
	Overweight	29	(33.3%)	58	(66.7%)	
	Obese	16	(31.4%)	35	(68.6%)	
<b>Sex</b>	Male	80	(35.7%)	144	(64.3%)	0.371
	Female	56	(31.5%)	122	(68.5%)	
<b>Nationality</b>	Saudi	133	(33.8%)	260	(66.2%)	0.957
	Non-Saudi	3	(33.3%)	6	(66.7%)	
<b>Residency</b>	Al-Qunfudah	70	(30.6%)	159	(69.4%)	0.193
	Al-Qouz	28	(31.1%)	62	(68.9%)	
	Haly	18	(51.4%)	17	(48.6%)	
	Almuzaylif	8	(40.0%)	12	(60.0%)	
	Al Ardiyat	6	(37.5%)	10	(62.5%)	
	Doga	3	(75.0%)	1	(25.0%)	
	Ahad Bani-Zayd	2	(33.3%)	4	(66.7%)	
	Khamis Harb	1	(50.0%)	1	(50.0%)	



<b>Marital status</b>	Single	100	(38.3%)	161	(61.7%)	0.029*
	Married	35	(26.1%)	99	(73.9%)	
	Divorced	1	(14.3%)	6	(85.7%)	
<b>Occupational status</b>	Student	88	(40.4%)	130	(59.6%)	0.006*
	Unemployed	11	(20.4%)	43	(79.6%)	
	Employee	37	(28.5%)	93	(71.5%)	
<b>Educational level</b>	Primary	2	(100%)	0	(0.0%)	0.141
	Intermediate	2	(40.0%)	3	(60.0%)	
	Diploma	4	(16.7%)	20	(83.3%)	
	Secondary	30	(33.3%)	60	(66.7%)	
	Bachelor's degree	93	(35.9%)	166	(64.1%)	
	Maser degree	2	(15.4%)	11	(84.6%)	
	Ph. D	3	(33.3%)	6	(66.7%)	
<b>Being diagnosed previously with a hernia</b>	Yes	7	(41.2%)	10	(58.8%)	0.661
	No	126	(33.8%)	247	(66.2%)	
	Don't know	3	(25.0%)	9	(75.0%)	

**Table 5:** Hernia knowledge score in association with sociodemographic factors and self-reported diagnosis (n=402).

BMI = Body Mass Index, Ph. D= A Doctor of Philosophy.

Table 6 illustrated that occupational status was significantly associated with the attitude of participants as positive attitude was observed moreover among students (79.4%), followed by unemployed subjects (74.1%), and employees (66.9%). Current hernia history was also significantly associated with the participants attitude as positive attitude was most frequently among participants with negative current hernia history (76.1%), followed by who was being diagnosed previously with a hernia (58.5%), and who did not know (50 %).

Parameter	Attitude score				P-value	
	Positive attitude		Negative attitude			
	N	%	N	%		
Age, y	18 to 29	207	(77.2%)	61	(22.8%)	0.1
	30 to 39	37	(63.8%)	21	(36.2%)	
	40 to 57	56	(73.7%)	20	(26.3%)	
BMI	Underweight	51	(81%)	12	(19.0%)	0.557
	Normal	147	(73.1%)	54	(26.9%)	
	Overweight	66	(75.9%)	21	(24.1%)	
	Obese	36	(70.6%)	15	(29.4%)	
Sex	Male	164	(73.2%)	60	(26.8%)	0.465
	Female	136	(76.4%)	42	(23.6%)	

**Citation:** H. Alkalash S, M. Odah M, M. Alkudaysi F, I. Alnashri H, Y. Alsayed M, et al. (2022) Knowledge and Attitude towards Hernia among Adults in Al-Qunfudhah, Saudi Arabia; A Cross-Sectional Community-Based Study. Ann Case Report. 7: 1054. DOI: 10.29011/2574-7754.101054

<b>Nationality</b>	Saudi	292	(74.3%)	101	(25.7%)	0.32
	Non-Saudi	8	(88.9%)	1	(11.1%)	
<b>Residency</b>	Al-Qunfudah	171	(74.7%)	58	(25.3%)	0.696
	Al-Qouz	69	(76.7%)	21	(23.3%)	
	Haly	26	(74.3%)	9	(25.7%)	
	Almuzaylif	12	(60%)	8	(40.0%)	
	Al Ardiyat	14	(87.5%)	2	(12.5%)	
	Doga	3	(75.0%)	1	(25.0%)	
	Ahad Bani-Zayd	4	(66.7%)	2	(33.3%)	
	Khamis Harb	1	(50.0%)	1	(50.0%)	
	<b>Marital status</b>	Single	203	(77.8%)	58	
Married		93	(69.4%)	41	(30.6%)	
Divorced		4	(57.1%)	3	(42.9%)	
<b>Occupational status</b>	Student	173	(79.4%)	45	(20.6%)	0.036*
	Unemployed	40	(74.1%)	14	(25.9%)	
	Employee	87	(66.9%)	43	(33.1%)	
<b>Educational level</b>	Primary	1	(50.0%)	1	(50.0%)	0.488
	Intermediate	3	(60%)	2	(40.0%)	
	Diploma	19	(79.2%)	5	(20.8%)	
	Secondary	68	(75.6%)	22	(24.4%)	
	Bachelor's degree	194	(74.9%)	65	(25.1%)	
	Maser degree	7	(53.8%)	6	(46.2%)	
	Ph. D	8	(88.9%)	1	(11.1%)	
<b>Being diagnosed previously with a hernia</b>	Yes	10	(58.8%)	7	(41.2%)	0.038*
	No	284	(76.1%)	89	(23.9%)	
	Don't know	6	(50.0%)	6	(50.0%)	

**Table 6:** Hernia attitude score in association with sociodemographic factors and self-reported diagnosis (n=402).

BMI = Body Mass Index, Ph. D= A Doctor of Philosophy

## Discussion

Because hernia can be associated with a lot of complications such as strangulated hernia are considered serious and potentially fatal complications, population knowledge, attitudes, and beliefs should be elicited to give suitable preventative approaches. This cross-sectional study aimed to assess knowledge and attitude of hernia among adults in Al-Qunfudhah, Saudi Arabia. The study included 402 adult participants.

Out of all participants, 33.8% had good knowledge (>50%) compared to 66.2% who had poor knowledge while 74.6% of them showed a positive attitude towards hernia diagnosis and management (>50%).

According to Alkhar et al. study, inadequate public awareness of the risk factors of hernia was found among their study group of young Saudis in Riyadh. Overall, only 48% of respondents could link hernia to the important underlying risk factors, while 22% disputed the link and 30% claimed no understanding of the risk variables or their link to hernia development [7]. In spite of the poor knowledge levels in both studies but the current study was much poorer knowledge than the other one. The great discrepancy between results of both studies may be related to relatively being resident in a remote area like Al-Qunfudhah governorate where health education campaign and number of health care facilities and health care providers are limited compared to capital city Riyadh.

Gender had no significant relationship with either knowledge or attitude. This is in line with studies done in Saudi Arabia that yielded similar results [7, 13]. Therefore, this conclusion implies that when it comes to boosting abdominal hernia awareness, it is not needed to consider gender [14].

Individuals between the ages of 18 and 29 appeared to have higher levels of knowledge about various hernia aspects than those in other age groups, which might be because this age group acquired information about hernias in school or college. This conclusion was also in accordance with the findings of a large study conducted in Riyadh, which found that people of comparable ages knew more than others [7].

The present study found that being single was significantly associated with an increased level of hernia knowledge ( $P=0.003$ ). This finding is similarly obtained by another study that reported a significant association between marital status and good level of awareness toward hernia 26.5% of participants who had a good knowledge were unmarried [15].

Unlike the study of Assakran et al., which was conducted in Al-Qassim, KSA, the current study found no significant association between knowledge level and educational level, as the study of Assakran et al. reported that graduates and degree holders had more knowledge than those with lower levels of education [13].

Occupational status was significantly associated with participants' attitudes in terms of positive attitude, as 79.4% of students having the greatest positive attitude. Additionally good knowledge was also more frequent among them ( $P = 0.006$ ). Knowledge about hernia can positively affect a patient's attitude and practice toward contacting healthcare before symptoms worsening [16]. This could explain the higher positive attitude and good knowledge among students who have a growing knowledge compared to others.

This study reveals that being diagnosed previously with a hernia was also associated with a positive attitude among study participants. Patient education has shown to be effective in terms of prevention and good outcomes [17]. While this ideally can be achieved by patient-physician relationship, it can improve patient knowledge, and consequently it could affect their attitudes which may explain a high positive attitude among previously diagnosed participants who educated previously by their physicians.

## Conclusions

Knowledge levels found in this study were less than among comparable populations in Saudi Arabia. There is a significant association between better hernia knowledge and younger age, being single, and being a student. Attitude levels were satisfactory among this study population and only being a student was significantly associated with a more positive attitude towards hernia diagnosis and treatment.

This indicates the need for further efforts towards increasing awareness about hernia risk factors among adults. To achieve that, the researchers recommend awareness campaigns that target the public through media channels such as TV or even social media like YouTube and or Instagram or other applications where they touch and reach public easily. Health educational messages could be designed and supplied in the primary health care or other health care facilities to give pits about hernia, its causes, risk factors, and complications, importance of its early diagnosis and options of therapy.

## Limitations

The type of study which was cross sectional observation study, was unable to give in depth view about participants' knowledge. So other qualitative studies are recommended to be done in order to understand more details about hernia perception especially among patients who already have diagnosed with hernia.

This study work did not examine source of information about hernia among the study participants, which may affect their knowledge accuracy. Additionally, it would reflect role of health care providers in educating population in Al-Qunfudhah governorates.

### Data Availability

All data and materials of the current research have been included in this article.

### Conflicts of Interest

The authors have declared that no any competing interests exist in this research.

### Funding Statement

The authors did not receive any financial support for this research, authorship, and/or its publication.

### Acknowledgments

The study researchers would like to express our grantees for all participants in this research.

## References

1. Ebbell B (1937) The ebers papyrus. The greatest Egyptian medical document. London: H. Milford and Oxford University Press.
2. Mathieu D, Luciani A (2004) Internal abdominal herniations. *AJR Am J Roentgenol*; 183: 397-404.
3. Jenkins JT, O'Dwyer PJ (2008) Inguinal hernias. *BMJ*. 336: 269-72.
4. Jha S (2020) A study to assess the prevalence and risk factors of inguinal hernia. *International Journal of Surgery*, 4: 330-332.
5. Kingsnorth A, LeBlanc K (2003) Hernias: inguinal and incisional. *Lancet*; 362: 1561-71.
6. AhmedAlenazi A, Alsharif MM, Hussain MA, Alenezi NG, Alenazi AA, et al. (2017) Prevalence, risk factors and character of abdominal hernia in Arar City, Northern Saudi Arabia in 2017. *Electron Physician*. 9: 4806-4811.
7. Alkhars AAA, Albukairi BM, Alanazi AM, Alharbi SM, Alsomali AH, et al. (2018) Awareness of risk factors of hernia among adults in Riyadh, KSA. *The Egyptian Journal of Hospital Medicine*; 71: 2780-2787.
8. Sørensen LT, Hemmingsen UB, Kirkeby LT, Kallehave F, Jørgensen LN (2005) Smoking is a risk factor for incisional hernia. *Arch Surg*; 140: 119-23.
9. Kochanek KD, Murphy SL, Anderson RN, Scott C (2004) Deaths: final data for 2002. *Natl Vital Stat Rep*; 53: 1-115.
10. Ozkaya Mutlu O, Colak O, Atay M (2017) Abdominal Wall Hernias and Their Repair with Inverse Abdominoplasty. In *Inverse Abdominoplasty* (pp. 157-173). Springer, Cham.
11. Pearl JP, Ritter EM (2013) Strangulated Inguinal Hernia. In: Jacob, B., Ramshaw, B. (eds) *The SAGES Manual of Hernia Repair*. Springer, New York, NY.
12. Al judaya Y, Al Hassan A, Al Sabi A, Alruwaili A, Alshalan S, Al Judia H (2018). Awareness of Risk Factors of Hernia among Adults in Al-jouf region, Saudi Arabia. *The Egyptian Journal of Hospital Medicine*, 72: 4012-4016.
13. Assakran B, Alharbi M, Alnikaiden G, Almozeri M, Alsuhaybani A, et al. (2020) Awareness of hernia risk factors among adults in Al-Qassim, Saudi Arabia. *IJMDC*. 4: 1662-1667.
14. Macintyre S, Hunt K, Sweeting H (1996) Gender differences in health: are things really as simple as they seem? *Soc Sci Med*; 42: 617-24.
15. Mahfouz ME, AlShalawi AM, Alzahrani AA, Alqaidi SH, Al-Holaifi RN (2020) Knowledge about inguinal hernia among the Saudi Population. *Middle East Journal of Family Medicine*, 7: 12
16. Lakshmi BVS, Rao VRM, Byragoni A, Saldanha D (2017) An assessment knowledge, attitudes, perceptions of patients regarding hernia and preference of surgeons on use of mesh in hernia repair. *World journal of pharmaceutical research*,7: 1027-1042.
17. Smith J, Parmely JD (2022) Ventral Hernia. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing.