

**KNOWLEDGE AND AWARENESS OF HERNIAS AND THEIR RISK FACTORS
AMONG MEDICAL STAFF: A CROSS-SECTIONAL STUDY**

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ABSTRACT

Objective: This research aims to determine the Knowledge and Awareness of Hernias and Their Risk Factors Among Medical Staff.

Methods: This research will utilize a cross-sectional survey design to evaluate the knowledge and awareness of hernias and their associated risk factors among medical personnel. A cross-sectional technique is suitable for obtaining data at a certain moment, offering a picture of the existing levels of knowledge and awareness within the target population.

Results: The study included 380 participants. The study included 380 participants. The most frequent gender among them was female (n= 213, 56%) and male (n= 167, 43.9%). The most frequent age among study participants was 36-40 years (n= 108, 28.4%), followed by less than 25 years (n= 106, 27.8%), then 31-35 years (n=92, 24.2%), more than 40 years (n=38, 10%), and 25-30 years (n=36, 9.4%). The most frequent nationality among study participants was Saudi (n= 289, 76.1%) and non-Saudi (n= 91, 23.9%). Professional level among study participants with most of them having nurse (n= 63, 16.6%) followed by consultant (n= 60, 15.8%), then specialist (n=51, 13.4%), general practitioner (n=49, 12.9%) and paramedic (n=48, 12.6%) the laboratory (n= 37, 9.7%), pharmacy (n=30,7.9%), resident (n=26, 6.8%), health allied professional (n=16,4.2%). The most frequent experience among participants was 6-10 years (159, 41.8%), followed by more than 10 years (155, 40.8%), then 5 years or more (66, 17.4%). Participants were asked about common types of hernias. The most frequent inguinal hernia (n=108, 28.4%) followed by umbilical hernia

(n=72, 18.9%), femoral hernia (n=68, 17.9%), then hiatal hernia, and diaphragmatic (n=60, 15.8%), I don't know (n=12, 3.2%).

Conclusion: The study highlights a critical overview of hernia awareness among medical personnel. Despite including a diverse group of professionals, findings indicate varying levels of knowledge regarding hernias and their associated risk factors. While most participants recognized common types, such as inguinal and umbilical hernias, awareness of less common types and complications was limited. This underscores the need for targeted educational programs to enhance understanding, particularly in recognizing risk factors like obesity, chronic coughing, and previous surgeries. Comprehensive training and regular updates on clinical practices can significantly improve early diagnosis and management, ultimately reducing complications associated with hernias.

INTRODUCTION

A hernia is the displacement of an organ or a portion of an organ through a normal body wall. For a hernia to develop, the structural membrane of the abdominal wall must compromise its mechanical integrity, hence impairing the regulation of intra-abdominal pressures during the Valsalva manoeuvre and torso impact. A hernia can be categorised based on its anatomical location. It can be categorised as a midline hernia (epigastric and umbilical) or a lateral hernia (spigelian and lumbar). Hernias may additionally be categorised according to their dimensions. They may be classified as small (< 2 cm), middle (> 2-4 cm), or giant (> 4 cm) [3]. The inguinal hernia is the most prevalent kind, succeeded by femoral and umbilical hernias [4].

It is estimated that about 20 million hernias occur globally each year. Abdominal hernia repair is a prevalent surgical intervention, with about 990,000 procedures conducted annually. Approximately 70,000 inguinal hernia procedures were conducted in the UK from 2001 to 2002, affecting 0.14% of the population and leading to over 100,000 National Health Service (NHS) hospital bed days. Among these surgeries, 62,969 involved the correction of primary hernias. A cross-sectional study in the USA indicates that over 700,000 inguinal hernia operations were conducted in 1993 [6]. A hernia is not inherently harmful; nonetheless, its consequences can be fatal. Any postponement or inability to identify a hernia may result in catastrophic outcomes [4]. Numerous hernia patients remain asymptomatic for extended durations, only manifesting pain, oedema, and a sensation of heaviness in the abdomen at the onset of symptoms [7]. A misguided approach to hernia diagnosis and treatment can lead to severe problems, including strangling, which compromises the blood supply to the hernia and results in intestinal gangrene. If left untreated, mortality rates may ascend to 30% due to substantial hernias across narrow orifices and the adhesions that develop between the hernia contents and the peritoneal lining of the sac [8].

Hernia is a prevalent condition both locally and internationally. A 2021 cross-sectional investigation revealed an abdominal hernia prevalence of 38.8% within the Saudi population [9]. A 2018 study in Riyadh emphasised the necessity for enhanced awareness of hernia risk factors among all age demographics and body mass index (BMI) categories. Although several people correlated hernias with hard lifting, less than 65% recognised that hernias could also be associated with pregnancy and surgical procedures. Moreover, less than 0.5% could associate hernias with additional risk factors like asthma, benign prostatic hyperplasia, smoking, diabetes, and chronic constipation [10]. A 2018 study conducted in the Al-Jouf region revealed that individuals possessed practical awareness of hernia risk factors, irrespective of gender, age, or educational attainment. More than 50% of participants correlated heavy lifting, pregnancy, constipation, and

previous surgeries with hernias, but less than 50% connected smoking, enlarged prostate, and diabetes mellitus (DM) to hernias. The study determined that additional research is necessary to corroborate these findings [11].

A 2020 study in Al-Qassim revealed no significant gender differences in understanding of hernias. Nevertheless, knowledge levels among participants aged 22 to 28 improved and further escalated with increased educational attainment. The predominant risk factor recognised was the lifting of large weights; however, participants failed to accurately recognise other risk variables [12]. Research of 1,119 Saudi nationals indicated a necessity for increased understanding of the etiology, risk factors, and therapeutic alternatives for inguinal hernias. Approximately 79% of participants acknowledged had insufficient knowledge regarding the causes, management, and prevention of hernias. Thus, the study advocated for the establishment of educational initiatives to enhance public comprehension of this widespread health concern [13]. Additional investigations into hernia prevalence, risk factors, and awareness have been undertaken in various regions. A 2020 prospective observational study conducted in Bangladesh with 100 patients hospitalized to a surgical department revealed that the majority of patients exhibited poor socioeconomic status, with primary risk variables including heavy lifting, smoking, ageing, prostatism, and constipation. The research indicated that financial limitations, reliance on herbal remedies, and apprehension regarding surgery resulted in postponed treatment and late presentations due to insufficient awareness [14].

METHODS

Study design

This research will utilize a cross-sectional survey design to evaluate the knowledge and awareness of hernias and their associated risk factors among medical personnel. A cross-sectional technique is suitable for obtaining data at a certain moment, offering a picture of the existing levels of knowledge and awareness within the target population.

Study approach

The research will be undertaken in [insert healthcare facility name or specify the location], encompassing both public and private healthcare establishments. The study will concentrate on medical personnel in departments including general medicine, surgery, emergency care, and outpatient services, where hernia diagnosis and management are probable.

Study population

The study population will comprise medical personnel employed in healthcare environments, including physicians, nurses, and medical interns.

Study sample

A stratified random sampling technique will be employed to choose participants. Medical personnel will be categorized by profession (e.g., physicians, nurses, interns) and department, guaranteeing a representative sample from diverse professional groups and clinical environments.

Study tool

For the current study, questionnaire was adopted for data collection, which was also categorized as a study tool.

Data collection

Data will be collected through a self-administered structured questionnaire aimed at evaluating knowledge and awareness of hernias and their associated risk factors. The questionnaire will encompass sections on demographic data, clinical experience, and targeted inquiries regarding

hernia identification, risk factors, and management strategies. The data collection period is anticipated to span 4-6 weeks, providing sufficient time for recruitment and participation.

Data analysis

The analysis will employ descriptive and inferential statistics. Descriptive statistics will encapsulate the demographic attributes of the participants and their responses to enquiries on knowledge and awareness. Inferential statistics, such as chi-square tests and logistic regression, will be utilized to examine the relationships among professional responsibilities, years of experience, and degrees of knowledge and awareness. A p-value below 0.05 will be deemed statistically significant. Data analysis will be conducted utilizing SPSS (version 25) or comparable statistical software.

Ethical considerations

Ethical approval for the study will be secured from the Institutional Review Board (IRB) of [insert institution name]. Informed consent will be secured from all participants before data collection, guaranteeing that participation is voluntary and confidential. The research will comply with the principles established in the Declaration of Helsinki, safeguarding participant rights and maintaining the confidentiality of all gathered data. No personal identities will be documented, and data will be securely stored, accessible solely to the research team.

RESULTS

The study included 380 participants. The most frequent gender among them was female (n= 213, 56%) and male (n= 167, 43.9%). Figure 1 shows the gender distribution among study participants. The most frequent age among study participants was 36-40 years (n= 108, 28.4%), followed by less than 25 years (n= 106, 27.8%), then 31-35 years (n=92, 24.2%), more than 40 years (n=38, 10%), and 25-30 years (n=36, 9.4%). Figure 2 shows the age distribution among study participants. The most frequent nationality among study participants was Saudi (n= 289, 76.1%) and non-Saudi (n= 91, 23.9%). Figure 3 shows the nationality of the study participants.

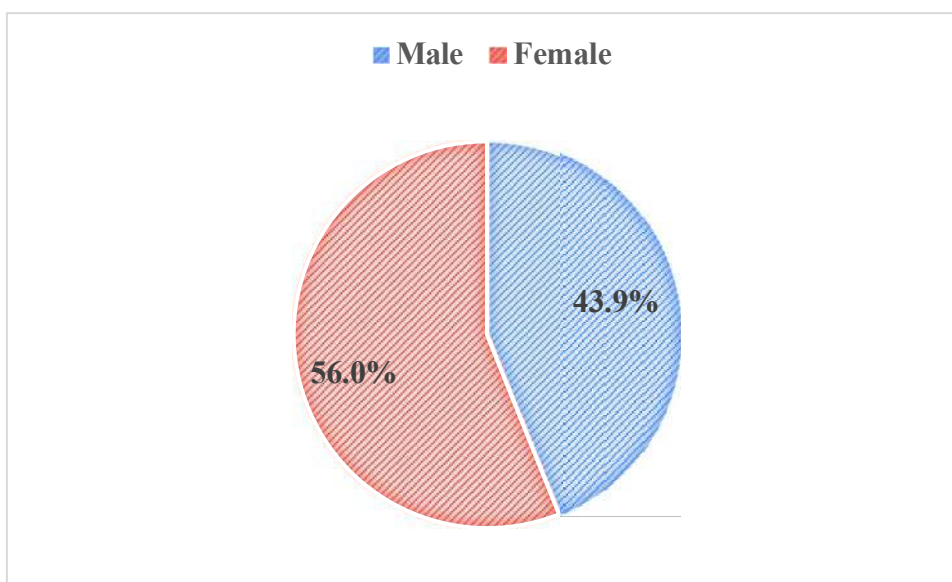


Figure 1: Gender distribution among study participants

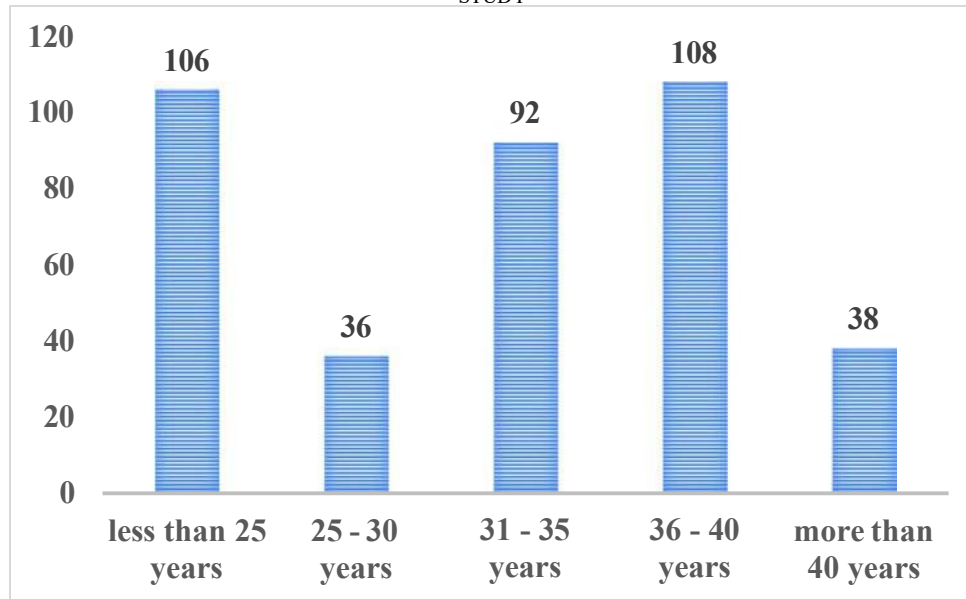


Figure 2: Age distribution among study participants

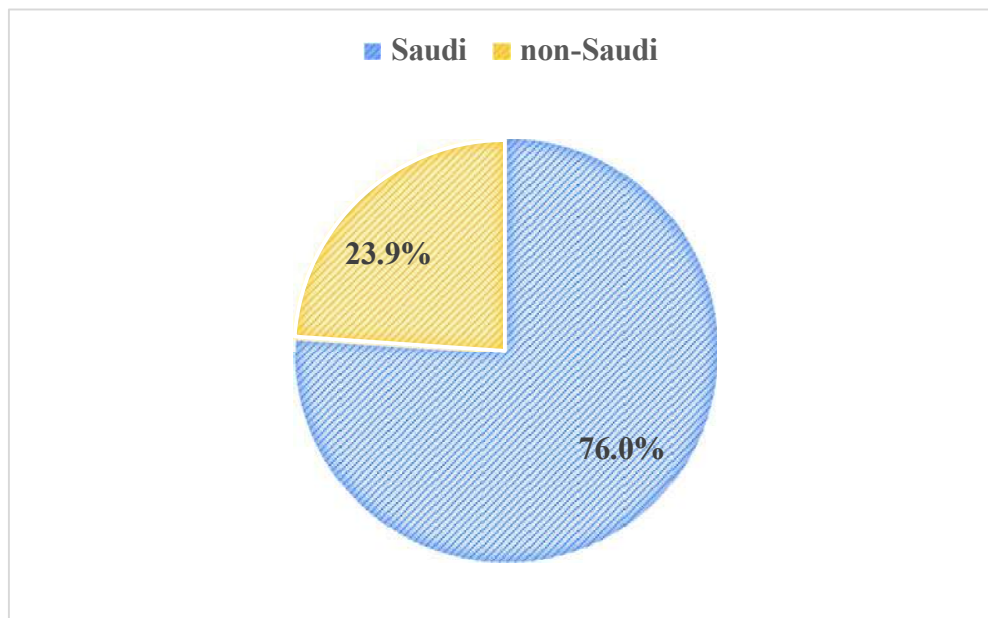


Figure 3: Nationality distribution among study participants

Professional level among study participants with most of them having nurse (n= 63, 16.6%) followed by consultant (n= 60, 15.8%), then specialist (n=51, 13.4%), general practitioner (n=49, 12.9%) and paramedic (n=48, 12.6%) the laboratory (n= 37, 9.7%), pharmacy (n=30,7.9%), resident (n=26, 6.8%), health allied professional (n=16,4.2%). Figure 4 shows the professional-level distribution among study participants.

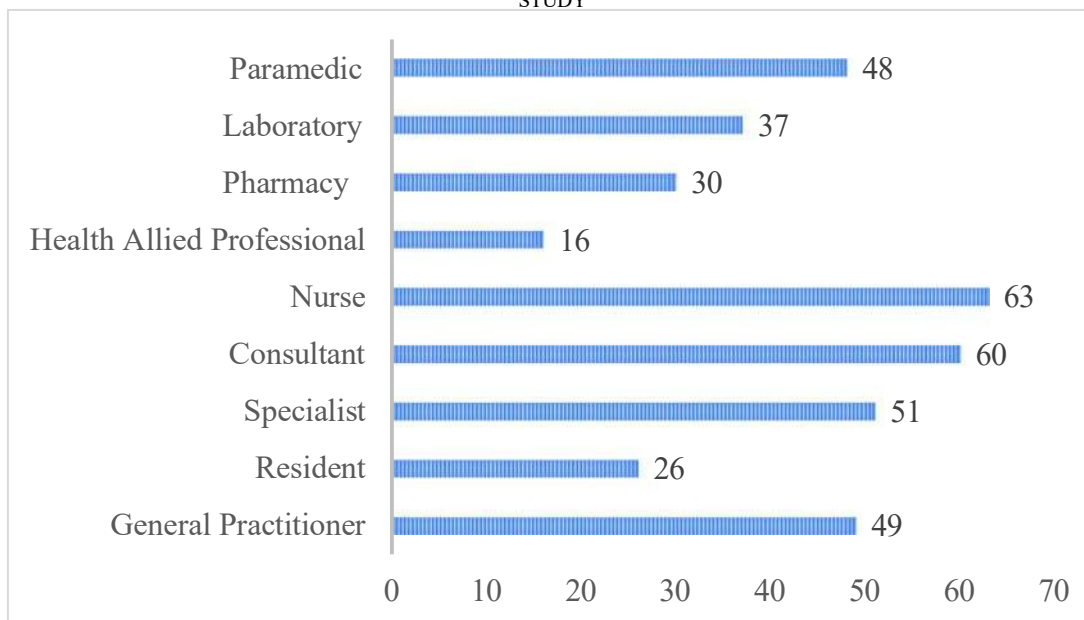


Figure 4: Professional level distribution among study participants

The most frequent experience among participants was 6-10 years (159, 41.8%), followed by more than 10 years (155, 40.8%), then 5 years or more (66, 17.4%).

Participants were asked about common types of hernias. The most frequent inguinal hernia (n=108, 28.4%) followed by umbilical hernia (n=72, 18.9%), femoral hernia (n=68, 17.9%), then hiatal hernia, and diaphragmatic (n=60, 15.8%), I don't know (n=12, 3.2%).

DISCUSSION

Hernias are a common surgical condition characterized by the displacement of an organ or tissue through a vulnerable area in the adjacent muscle or connective tissue. Inguinal and incisional hernias are the most commonly observed types in clinical practice, with inguinal hernias constituting the majority of cases. These conditions hold considerable clinical significance due to their potential complications, such as strangulation, necessitating immediate surgical intervention. Kingsnorth and LeBlanc [18] assert that inguinal hernias constitute a significant proportion of abdominal wall hernias, and their management has been a focal point in surgical care for decades. Incisional hernias, arising at the location of a prior surgical incision, frequently pose a challenge in post-operative care, particularly in patients with impaired healing [18].

The prevalence of hernias has been extensively studied worldwide, demonstrating the condition's widespread occurrence. Dabbas et al. [19] contend that the incidence of abdominal wall hernias may be underestimated due to antiquated clinical teachings and insufficient data collection methodologies across diverse healthcare systems. Ahmed Alenazi et al. [20] reported a prevalence rate of 9.3% for abdominal hernias in a study conducted in Northern Saudi Arabia, highlighting the condition's considerable impact on public health in the area. These studies highlight the significance of comprehending hernia prevalence and tackling healthcare disparities across various geographic regions. The prevalence of hernias, especially in areas with restricted healthcare access, indicates a necessity for enhanced education and resources to facilitate prompt diagnosis and treatment. Notwithstanding advancements in surgical methodologies, hernias continue to pose a

significant challenge, especially in areas with a high incidence of untreated hernias. A study by Chendjou et al. [21] in Southwest Cameroon revealed a significant prevalence of untreated hernias, highlighting the overarching problem of healthcare accessibility and awareness in resource-constrained environments. These findings underscore the necessity of fortifying healthcare systems and enhancing awareness regarding the criticality of early surgical intervention for hernias. Sazhin et al. [22] similarly reported a high prevalence of abdominal wall hernias in the Russian population, indicating that aging, occupational strain, and insufficient post-surgical follow-up significantly contributed to the condition's persistence.

Comprehending the risk factors linked to hernias is essential for efficient prevention and management. Albukairi et al. [23] investigated the awareness of hernia risk factors among adults in Riyadh, Saudi Arabia, revealing that a significant number were uninformed about lifestyle factors, including obesity and smoking, that contribute to hernia formation. Smoking is a recognized risk factor, especially for incisional hernias. Sørensen et al. [26] established that smoking hinders wound healing by diminishing blood flow to tissues, consequently elevating the risk of hernia development post-surgery. This underscores the necessity for public education and preoperative counseling to mitigate modifiable risk factors such as smoking, which can profoundly affect postoperative outcomes.

Additional lifestyle factors, including obesity and physical exertion, significantly contribute to hernia formation. Obesity elevates intra-abdominal pressure, potentially resulting in the herniation of abdominal contents through vulnerable areas in the abdominal wall. Moreover, professions that require substantial lifting or intense physical exertion have been consistently linked to an increased risk of hernia development [22]. Albukairi et al. [23] highlighted that although occupational hazards are broadly recognized, public awareness of these dangers is inadequate, especially in areas with a high prevalence of manual labor. Consequently, mitigating occupational hazards via workplace education and advocating safe lifting techniques may diminish the prevalence of hernias.

A significant risk factor is prior surgical history. Patients who have undergone abdominal surgery face an increased risk of incisional hernias, especially if they encountered post-operative complications like infections or delayed wound healing. Salamone et al. [24] examined the distinct challenges presented by abdominal wall hernias in cirrhotic patients, wherein the condition is intensified by the patients' impaired healing abilities resulting from liver disease. Such cases illustrate the intricacy of hernia management in patients with preexisting comorbidities, necessitating modifications to standard treatment protocols to accommodate prolonged healing and elevated recurrence risks. The management of hernias, especially regarding surgical intervention, depends on the hernia type, the patient's symptoms, and the risk of complications. Inguinal hernias, for example, may frequently be managed through a watchful waiting strategy in minimally symptomatic males. Fitzgibbons et al. [27] performed a randomized clinical trial comparing watchful waiting to surgical repair of inguinal hernias and determined that although numerous patients could safely postpone surgery, those who experienced complications ultimately necessitated operative intervention. This underscores the necessity for meticulous patient selection when determining the appropriateness of conservative management versus surgical intervention. In most instances, surgical intervention is the definitive treatment to avert the progression of complications such as strangulation. The selection of anesthesia for hernia repair surgery is a crucial factor. Kingsnorth and LeBlanc [28] examined the different anesthesia options—general, regional, or local—and observed that the choice frequently hinges on the patient's overall health and the specific type of hernia being addressed. Local anesthesia is frequently preferred for high-

risk patients or in environments where general anesthesia may present further hazards. Furthermore, advancements in laparoscopic techniques have rendered minimally invasive hernia repairs more accessible, providing patients with diminished recovery times and lower recurrence rates relative to conventional open surgery.

Notwithstanding these advancements, considerable challenges persist in hernia management, especially in areas with constrained healthcare resources. The research conducted by Chendjou et al. [21] and Sazhin et al. [22] underscores the persistent necessity for enhanced access to surgical care in developing areas, where untreated hernias constitute a significant public health concern. Moreover, enhancing awareness among healthcare professionals and the public about the risks and symptoms of hernias can facilitate earlier diagnosis and timely referral for treatment, thereby alleviating complications and improving patient outcomes.

CONCLUSION

The study highlights a critical overview of hernia awareness among medical personnel. Despite including a diverse group of professionals, findings indicate varying knowledge regarding hernias and their associated risk factors. While most participants recognized common types, such as inguinal and umbilical hernias, awareness of less common types and complications was limited. This underscores the need for targeted educational programs to enhance understanding, particularly in recognizing risk factors like obesity, chronic coughing, and previous surgeries. Comprehensive training and regular updates on clinical practices can significantly improve early diagnosis and management, ultimately reducing complications associated with hernias.

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ANNEX 1: DATA COLLECTION TOOL

Age (years)	Gender			
	Male	Female		
Marital Status	Single	Married	Divorced	Widow
Professional level	General Practitioner	Resident	Specialist	Consultant
Others	Nurse	Health Allied Professional		
Pharmacy	Laboratory	Paramedic		
Experience	=<5 years		6-10 years	>10 years
Nationality	Saudi	Non-Saudi	Working hours per week	

Knowledge about Hernia

1. Which of the following are common types of hernias?

- Inguinal hernia
- Femoral hernia
- Umbilical hernia
- Hiatal hernia
- Diaphragmatic hernia
- I don't know

3. Which of the following is NOT a known complication of untreated hernias?

- Incarceration
- Strangulation
- Adhesion
- Necrosis
- I don't know

4. What is the best method for confirming a diagnosis of a hernia?

- Clinical examination
- Ultrasound
- CT scan
- MRI
- I don't know

5. Which of the following symptoms is most likely associated with a hernia?

- Localized swelling or bulge
- Pain or discomfort at the site of the bulge
- Nausea or vomiting
- Changes in bowel habits
- I don't know

On a scale of 1 to 5, how would you rate your overall knowledge of hernias and their risk factors?

- 1
- 2
- 3
- 4
- 5

Awareness about Hernia

1. Which of the following are considered risk factors for developing a hernia?

- Heavy lifting
- Chronic coughing
- Obesity
- Pregnancy
- Previous abdominal surgery
- I don't know

2. How does chronic constipation contribute to the risk of hernia development?

- Increases abdominal pressure
- Weakens abdominal muscles
- Both
- I don't know

3. Is family history a risk factor for hernia development?

- Increased age increases the risk
- Younger individuals are more at risk
- No influence

- No
 - I don't know
4. How does age influence the risk of developing hernias?
- Increased age increases the risk
 - Younger individuals are more at risk
 - No influence
 - I don't know
5. What impact does obesity have on the likelihood of developing a hernia?
- Increases the risk due to pressure on the abdominal wall
 - Reduces the risk due to fat protecting the abdominal wall
 - No significant impact
 - I don't know
6. Chronic conditions such as COPD (chronic obstructive pulmonary disease) and asthma can increase the risk of hernias due to:
- Repeated coughing
 - Increased abdominal pressure
 - Weakened diaphragm
 - All of the above
 - I don't know

APPENDIX 2: Participants responses to scale items

Gender

	Frequency	Percent
Male	167	43.9
Female	213	56.1
Total	380	100.0

Age

	Frequency	Percent
less than 25 years	106	27.9
25 - 30 years	36	9.5
31 - 35 years	92	24.2
36 - 40 years	108	28.4
more than 40 years	38	10.0
Total	380	100.0

Marital Status

	Frequency	Percent
Single	136	35.8
Married	153	40.3
Divorced	54	14.2
Widow	37	9.7
Total	380	100.0

Nationality

	Frequency	Percent
Saudi	289	76.1
non-Saudi	91	23.9
Total	380	100.0

Professional level

	Frequency	Percent
General Practitioner	49	12.9
Resident	26	6.8
Specialist	51	13.4
Consultant	60	15.8
Nurse	63	16.6
Health Allied Professional	16	4.2
Pharmacy	30	7.9
Laboratory	37	9.7
Paramedic	48	12.6
Total	380	100.0

Experience

	Frequency	Percent
=<5 years	66	17.4
6-10 years	159	41.8
>10 years	155	40.8
Total	380	100.0

Common types hernias

	Frequency	Percent
Inguinal hernia	108	28.4
Femoral hernia	68	17.9
Umbilical hernia	72	18.9
Hiatal hernia	60	15.8
Diaphragmatic hernia	60	15.8
I don't know	12	3.2
Total	380	100.0

NOT known complications of untreated hernias

	Frequency	Percent
Incarceration	110	28.9
Strangulation	102	26.8
Adhesion	60	15.8
Necrosis	72	18.9
I don't know	36	9.5
Total	380	100.0

The best method for confirming diagnosis of hernia

	Frequency	Percent
Clinical examination	120	31.6
Ultrasound	116	30.5
CT scan	60	15.8
MRI	64	16.8
I don't know	20	5.3
Total	380	100.0

Symptoms most likely associated with hernia

	Frequency	Percent
Localized swelling or bulge	115	30.3
Pain or discomfort at the site of the b	113	29.7
Nausea or vomiting	72	18.9
hanges in bowel habits	60	15.8
I don't know	20	5.3
Total	380	100.0

On scale 1 to 5 rate knowledge hernias and risk factors

	Frequency	Percent
1	24	6.3
2	18	4.7
3	88	23.2
4	128	33.7
5	122	32.1
Total	380	100.0

Considered risk factors for developing hernia

	Frequency	Percent
Heavy lifting	151	39.7
Chronic coughing	117	30.8
Obesity	76	20.0
Pregnancy	28	7.4
Previous abdominal surgery	8	2.1
Total	380	100.0

Chronic constipation contribute to risk of hernia development

	Frequency	Percent
Increases abdominal pressure	127	33.4
Weakens abdominal muscles	113	29.7

Both	109	28.7
I don't know	31	8.2
Total	380	100.0

Family history risk factor for hernia

	Frequency	Percent
Increased age increases the risk	140	36.8
Younger individuals are more at risk	80	21.1
No influence	80	21.1
No	45	11.8
I don't know	35	9.2
Total	380	100.0

Age influence risk developing hernias

	Frequency	Percent
Increased age increases the risk	171	45.0
Younger individuals are more at risk	125	32.9
No influence	48	12.6
I don't know	36	9.5
Total	380	100.0

Impact does obesity likelihood developing hernia

	Frequency	Percent
Increases the risk due to pressure on the abdominal wall	156	41.1
Reduces the risk due to fat protecting the abdominal wall	140	36.8
No significant impact	60	15.8
I don't know	24	6.3
Total	380	100.0

Chronic conditions increase risk of hernias

	Frequency	Percent
Repeated coughing	144	37.9
Increased abdominal pressure	104	27.4
Weakened diaphragm	68	17.9
All of the above	48	12.6
I don't know	16	4.2
Total	380	100.0

Chi-Square Test

Frequencies

Experience

	Observed N	Expected N	Residual
=<5 years	66	126.7	-60.7
6-10 years	159	126.7	32.3
>10 years	155	126.7	28.3
Total	380		

On.scale.1.to.5.rate.knowledge.hernias.and.risk.factors

	Observed N	Expected N	Residual
1	24	76.0	-52.0
2	18	76.0	-58.0
3	88	76.0	12.0
4	128	76.0	52.0
5	122	76.0	46.0
Total	380		

Professional.level

	Observed N	Expected N	Residual
General Practitioner	49	42.2	6.8
Resident	26	42.2	-16.2
Specialist	51	42.2	8.8
Consultant	60	42.2	17.8
Nurse	63	42.2	20.8
Health Allied Professional	16	42.2	-26.2
Pharmacy	30	42.2	-12.2
Laboratory	37	42.2	-5.2
Paramedic	48	42.2	5.8
Total	380		

KNOWLEDGE AND AWARENESS OF HERNIAS AND THEIR RISK FACTORS AMONG MEDICAL STAFF: A CROSS-SECTIONAL STUDY

Age

	Observed N	Expected N	Residual
less than 25 years	106	76.0	30.0
25 - 30 years	36	76.0	-40.0
31 - 35 years	92	76.0	16.0
36 - 40 years	108	76.0	32.0
more than 40 years	38	76.0	-38.0
Total	380		

Gender

	Observed N	Expected N	Residual
Male	167	190.0	-23.0
Female	213	190.0	23.0
Total	380		

Test Statistics

	Experience	On.scale.1.to.5.rate.knowledge.hernias.and.risk.factors	Professional.level	Age	Gender
Chi-Square	43.647 ^a	145.158 ^b	48.116 ^c	68.737 ^b	5.568 ^d
df	2	4	8	4	1
Asymp. Sig.	<.001	<.001	<.001	<.001	.018

- a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 126.7.
- b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 76.0.
- c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 42.2.
- d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 190.0.

p-value> 0.05