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How Well Fitness and Sports Fans Comprehend Inguinal Hernias



Abstract: - Background: It is important to determine how well-informed sports fans are about inguinal hernias and what variables put them at risk for getting one. **Methodology:** Study conducted from August 2023 to December 2023. The approved online survey was distributed on social media platforms throughout Saudi Arabia. **Results:** Of the 459 people who took part in our study, 52.1% were men and 44.9% were between the ages of 20 and 30. The distribution of participants with high, average, and poor knowledge and awareness yielded 11%, 56%, and 33%, respectively. Unmarried women under the age of 40 exhibit a higher and average understanding of hernia compared to married men over the age of 40, with a comparison rate of 73. % vs. 56%, $p=.001$, 77% vs. 57%, $p=.001$, 69.6% vs. 60.3%, $p=.001$, respectively.

Conclusion: There is sufficient understanding, familiarity, and knowledge regarding hernias and the factors that put individuals at risk among those involved in sports and fitness. It is advisable for married men aged 40 and above to acquire knowledge regarding hernias and the various factors that contribute to their susceptibility. Healthcare providers should give priority to this specific population when providing education on inguinal hernias to patients

Keywords: inguinal hernia, sport, fitness, Saudi Arabia, Survey, Questionnaire

1. Introduction:

The abnormal displacement of the bodily cavity contents out of their proper location is known as a hernia [1]. Inguinal (inner groin), incisional (coming from an incision), femoral (outer groin), umbilical (belly button), and hiatal (upper stomach) hernias are the most prevalent types [2]. Surgeons have been able to create a number of technical procedures that provide more effective repairs because to the identification of crucial anatomical components that are specific to each type of hernia [3]. Risk factors include old age and male sex. Due to the significant intra-abdominal pressure, they create, excessive lifting and chronic coughing are traditionally viewed as risk factors. Another risk factor mentioned is obesity [4]. In terms of risk factors, men are more likely than women to have an inguinal hernia [5]. Pregnancy, weightlifting, constipation, and other chronic conditions, including Asthma and Diabetes Mellitus, are the main risk factors for hernias [6]. Patients who have already experienced an inguinal hernia on one side are more likely to acquire another on the other side [7]. Hip and groin discomfort is frequently reported between athletes of different ages, accounting for 5 and 6 percent of sports-related injuries [8]. The sport, age group, and level of rivalry, besides several other variables, all have an impact on how frequent hip/groin accidents happen to athletes [9]. In the United Kingdom, hip abnormalities represented 50% of sports groin pain, while in Ireland, chronic groin pain in sports contributed for 56% of cases [10]. In addition that US alone, nearly 1 million of hernia surgeries take place yearly, Nearly 770,000 of these instances

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were inguinal hernia repair [2]. For instance, a separate investigation discovered that the lack of knowledge and economic considerations were the most commonly cited causes of a hernia's delayed onset of discovery [11]. In 2022, 50.9 % of the population of the Gulf Arab countries had a high level of awareness and they were significantly younger showed ($p=0.000$ with a mean age of 28 ± 9) compared with 49.1% who showed a poor awareness level (mean age 31 ± 11). All the male and female athletes had been examined by physicians in Saudi Arabia to achieve the maximum accuracy of diagnosis depending on the history and physical examination done on them during the whole year of 2022. No significant difference in awareness level was noticed between male and females who participated in this study [12]. The reason of conducting this topic is due to the inadequate number of research studies related to our topic, particularly in Saudi Arabia, and to ensure that information about risk factors and treatment is understood and that awareness of inguinal hernia among athletes is shared. So the aim of this study was designed to assess the knowledge and awareness level of inguinal hernia among athletes in Saudi Arabia, also our study aimed to assess the awareness of the risk factor of inguinal hernia in the Saudi athlete's population, also our study aimed to measure the prevalence of inguinal hernia among athletes in Saudi Arabia.

2. Objectives:

Our study aimed to measure the prevalence of inguinal hernia among athletes in Saudi Arabia, to assess the knowledge and awareness level of inguinal hernia among athletes in Saudi Arabia and to assess the awareness of the risk factor of inguinal hernia in the Saudi athlete's population.

Materials and Methods:

Study design: This was a descriptive cross-sectional community-based study was conducted in Saudi Arabia during 2023-2024.

Study setting: Participants, recruitment, and sampling procedure: The study's population consisted of Saudi athletes; participants were recruited from people receiving the questionnaire.

Inclusion and Exclusion criteria: In this research, we included adult males and females who are athletes in Saudi Arabia with informed consent to participate in this study. Adult male and female who are not athletes nor within the age of 20 and above are excluded from this study.

Sample size: Using the following formula and applying means and standard deviation, the sample size was determined by (Raosoft, Inc., Seattle, WA, USA) to be 384 people.

Taking into account the maximum allowable marginal error ($=0.05$) and the standard deviation ($=1.96$ for the 95 % confidence interval).

Therefore, $n = (1.96)^2 \times 0.50 \times 0.50 / (0.05)^2 = 384$ is the calculated minimum sample size needed for this study.

Method for data collection and instrument (Data collection Technique and tools): Through social media, an electronic copy of a structured questionnaire with open- and closed-ended questions was sent to the athletes' population. For the purpose of calculating body mass index (BMI), we included open questions for weight, and height. Closed-ended questions included multiple choices with the most popular responses and the option to select more than one response for the age, risk factors, causes, complications, management, and prevention. The questionnaire asked specific questions for people with a history of hernias. The questionnaire had four sections included of the person's demographic information, past medical history, diagnostic criteria, and symptoms and signs, followed by the knowledge and awareness assessment section

Scoring system: Overall, sixteen question Assessment of the participants' knowledge and awareness about inguinal hernia, one point given for correct answers, and zero points for incorrect answers or I don't know, the scoring system was divided as follows:

≥ 12 for a high- level of knowledge and awareness, 6-11 for a medium-level, ≤ 5 for low-level

Analyzes and entry method: The computer's "Microsoft Office Excel Software" (2016) program was used to input data. The Statistical Package of Social Science Software (SPSS) application, version 20 (IBM SPSS Statistics for Windows, version 20.0), was then used to import the data into the application (IBM Corp., Armonk, NY) to be statistically analyzed.

3. Results:

Starting with age distribution, data in table (1) showed that the majority of the population falls within the 20-30 age range, accounting for 44.9% of the sample. This is followed by individuals aged less than 20, comprising 15.7% of the population. The gender distribution indicates that the sample is fairly balanced, with 52.1% male and 47.9% female respondents. Moving on to location, the data reveals that the largest proportion of respondents resides in the West, constituting 64.1% of the sample. This is followed by the South at 17.0%, the Middle at 10.0%,

the East at 8.1%, and the North at 0.9%. The education level of the respondents is also diverse, with the majority holding a Bachelor's degree (57.7%), followed by secondary education (22.9%) and postgraduate qualifications (11.5%). Marital status data indicates that the majority of respondents are single (60.6%), followed by married individuals (36.8%) and a smaller percentage who are divorced (2.6%). The number of children per respondent varies, with the highest percentage (63.6%) reporting no children. However, there are also significant proportions reporting 1-3 children (15.0%), 4-6 children (16.6%), and more than 6 children (4.8%). The data also delves into the favorite types of sports among the respondents, with running (41.4%) and soccer (27.7%) emerging as the top two choices. Finally, the number of hours spent practicing sports per week varies, with the majority (58.4%) dedicating 1-2 hours per week to their chosen activity. However, significant proportions also allocate 3-4 hours per week (21.6%), 5-7 hours per week (13.5%), and more than 7 hours per week (6.5%).

Table (1): Sociodemographic characteristics of participants (n=459)

Parameter		No.	%
Age	less than 20	72	15.7
	20_30	206	44.9
	31_40	55	12
	41_50	62	13.5
	51_60	40	8.7
	more than 60	24	5.2
Gender	Male	239	52.1
	Female	220	47.9
Location	East	37	8.1
	Middle	46	10
	North	4	0.9
	South	78	17
	West	294	64.1
Education Level	middle	12	2.6
	secondary	105	22.9
	Bachelor's	265	57.7
	diploma	24	5.2

Table (2) showed that 3.7% of the respondents reported having had an inguinal hernia, while 57.7% stated that they have not experienced this condition. A significant proportion (38.6%) indicated that they were unsure of what an inguinal hernia is. In terms of diagnosis, the majority of individuals (35.3%) reported being diagnosed by a doctor, while smaller percentages mentioned self-diagnosis (52.9%) or diagnosis by family members (11.8%). The timing of diagnosis varied, with the majority of cases (70.6%) being identified five years ago, followed by 11.8% diagnosed 3-4 years ago. Regarding hernia type, the majority (82.4%) reported groin hernias, while 17.6% indicated hernias in the thigh area. Additionally, the distribution of hernia sizes was reported as 47.1% small, 41.2% middle, and 11.8% big, indicating a diverse range of hernia sizes among the respondents. Notably, a high percentage (88.2%) believed that their hernia was reversible, while 11.8% did not share this belief. The location of the hernia was predominantly reported as the groin (70.6%), followed by around the navel (17.6%) and the upper part of the intestine (11.8%). Repetition of hernias was reported by 35.3% of individuals. Chronic pain during exercise due to an inguinal hernia was reported by 52.9% of respondents, with the majority (77.8%) indicating that the pain was located in the thigh. The treatment and management of inguinal hernias varied among the respondents, with lifestyle modification being the most commonly followed approach (58.8%), followed by surgical correction (35.3%) and pharmaceutical treatment (5.9%). Lastly, the survey included an assessment of the respondents' knowledge about hernias and their causes. The results indicate a wide range of self-reported knowledge levels, with the largest proportion (42.0%) rating their knowledge at the lowest level (0), and smaller percentages distributed across the higher knowledge levels.

Table (2): Knowledge of inguinal hernia among athletes (n=459).

Parameter	No.	%	
Had an inguinal hernia	Yes	17	3.7
	No	265	57.7
	I don't know what an inguinal hernia is	177	38.6
Diagnosed with inguinal hernia by	Self-diagnosis	9	52.9
	By family members	2	11.8
	By the doctor	6	35.3
When was the diagnosis	Less than a year ago	2	11.8
	1-2 years ago	1	5.9
	3-4 years ago	2	11.8
	5 years ago	12	70.6
Hernia type	Groin	14	82.4
	My thigh	3	17.6
Size of the hernia	Big	2	11.8
	Middle	7	41.2
	Small	8	47.1
Hernia is reversible	Yes	15	88.2
	No	2	11.8
Hernia located	Groin	12	70.6
	The upper part of the intestine	2	11.8
	Around the navel	3	17.6
Repetition	Once	11	64.7
	More than once	6	35.3
Suffer from chronic pain while exercising due to an inguinal hernia	Yes	9	52.9
	No	8	47.1
If yes, where is the pain located	Lower abdomen	2	22.2
	Thigh	7	77.8
Complain of any pain when touching the area	Yes	5	29.4
	No	12	70.6
Family history of hernia	Yes	13	76.5
	No	4	23.5
Previous surgery in the abdominal area	Yes	7	41.2
	No	10	58.8
Have any history of abdominal injuries	Yes	3	17.6
	No	14	82.4
Suffer from a chronic cough	Yes	3	17.6
	No	14	82.4
Suffer from chronic constipation	Yes	7	41.2
	No	10	58.8
Suffer from smoking	Yes	9	52.9
	No	8	47.1
Suffering from any complications	Yes	2	11.8
	No	15	88.2
Had surgical correction of inguinal hernia	Yes	7	41.2
	No	10	58.8
Treatment followed	Pharmaceutical	1	5.9
	Lifestyle modification	10	58.8
	Surgery	6	35.3
Evaluate your knowledge about hernia and its causes	0	193	42
	1	24	5.2
	2	31	6.8
	3	33	7.2
	4	30	6.5
	5	40	8.7
	6	19	4.1
	7	43	9.4
	8	14	3.1
	9	10	2.2
	10	22	4.8

The first question in table (3) addressed the susceptibility of asthma patients to developing inguinal hernias. The responses indicate that a significant portion of the participants believe there may be a connection, with 75 individuals (16.3%) answering "Yes," while 69 (15.0%) answered "No," and 65 (14.2%) selected "Maybe." A substantial number of respondents, 250 (54.5%), indicated "I don't know." The survey also inquired about the relationship between lifting heavy weights and inguinal hernias. The majority of respondents, 232 (50.5%), indicated that they believe there is a connection, while a small percentage, 11 (2.4%), answered "No." Additionally, 91 (19.8%) participants selected "Maybe," and 125 (27.2%) responded with "I don't know." The data also addressed the potential association between inguinal hernias and constipation. The responses indicate that a significant portion of participants, 133 (29.0%), believe there may be a connection, while 33 (7.2%) answered "No," and 102 (22.2%) selected "Maybe." A substantial number of respondents, 191 (41.6%), indicated "I don't know." The survey also asked about the potential link between smoking and inguinal hernias. The responses show that there is no clear consensus, as 66 individuals (14.4%) believe there is a connection, while 112 (24.4%) answered "No," and 99 (21.6%) selected "Maybe." A significant number of respondents, 182 (39.7%), indicated "I don't know." The data also addressed the potential association between an enlarged prostate and inguinal hernias. The responses indicate that a substantial portion of participants, 98 (21.4%), believe there may be a connection, while 29 (6.3%) answered "No," and 99 (21.6%) selected "Maybe." A majority of respondents, 233 (50.8%), indicated "I don't know." Furthermore, the survey inquired about the potential relationship between pregnancy and labor and inguinal hernias. The responses show that there is a range of opinions, with 157 individuals (34.2%) believing there may be a connection, while 23 (5.0%) answered "No," and 100 (21.8%) selected "Maybe." A substantial number of respondents, 179 (39.0%), indicated "I don't know." The survey also addressed the potential connection between inguinal hernias and surgery. The results indicate that there is no clear consensus, as 147 individuals (32.0%) believe there is a connection, while 56 (12.2%) answered "No," and 93 (20.3%) selected "Maybe." A significant number of respondents, 163 (35.5%), indicated "I don't know." Finally, the survey asked about the potential susceptibility of diabetics to developing inguinal hernias. The responses indicate that there is a divergence of opinions, as 32 individuals (7.0%) believe there is a connection, while 111 (24.2%) answered "No," and 82 (17.9%) selected "Maybe." A majority of respondents, 234 (51.0%), indicated "I don't know."

Table (3): Knowledge of inguinal hernia risk factors and causes among athletes (n=459).

Parameter	Yes	No	Maybe	I don't know
Asthma patient is more susceptible to developing an inguinal hernia	75	69	65	250
	16.30%	15.00%	14.20%	54.50%
Inguinal hernia is related to lifting heavy weights	232	11	91	125
	50.50%	2.40%	19.80%	27.20%
Inguinal hernia has anything to do with constipation	133	33	102	191
	29.00%	7.20%	22.20%	41.60%
Inguinal hernia is related to smoking	66	112	99	182
	14.40%	24.40%	21.60%	39.70%
Patients who suffer from an enlarged prostate have a high probability of developing an inguinal hernia	98	29	99	233
	21.40%	6.30%	21.60%	50.80%
Pregnancy and labor can be related to inguinal hernia	157	23	100	179
	34.20%	5.00%	21.80%	39.00%
Inguinal hernia is related to surgery	147	56	93	163
	32.00%	12.20%	20.30%	35.50%
Diabetics are more susceptible to developing inguinal hernia	32	111	82	234
	7.00%	24.20%	17.90%	51.00%

Table (4) showed that when considering the causes of inguinal hernia, it is interesting to note that weightlifting sport and weak abdominal muscles are perceived as significant contributing factors, with 67.3% and 60.6% of respondents attributing the condition to these causes, respectively. Obesity and pregnancy/birth are also identified as potential causes, with 33.8% and 42.7% of respondents associating them with inguinal hernia, respectively. Moving on to the preferred treatment for inguinal hernia, the majority of respondents (63.2%) advocate for surgical intervention, while 34.2% believe in the efficacy of lifestyle modifications. Pharmaceutical treatment is considered the least favorable option, with only 2.6% of respondents endorsing it. Interestingly, a

slight majority (53.8%) of respondents are aware that inguinal hernia repair is best done with surgical mesh, while 46.2% are not aware of this fact. When it comes to the perceived complications after surgical treatment of inguinal hernia, the data revealed that a significant proportion of respondents anticipate issues such as the problem recurring (42.9%), surgical site infection (41.6%), and chronic pain or discomfort in the affected area (45.1%). It is noteworthy that a considerable portion (20.7%) of respondents believes that there will be no complications post-surgery. The table also sheds light on the perceived causes of recurrence of inguinal hernia. Notably, reasons related to the surgeon and surgical procedures (46.0%) and the site of surgery and the type of hernia (53.6%) are identified as potential factors contributing to recurrence. Family history of inguinal hernia is also considered a significant factor by 28.8% of respondents. Furthermore, the data indicates that a substantial proportion of respondents believe that raising awareness and taking preventive measures are crucial in managing inguinal hernia. For instance, 55.3% of respondents advocate for lifting weights the right way to prevent the condition, while 80.8% emphasize the importance of seeking medical attention if experiencing symptoms such as cough, dysuria, constipation, or abdominal swelling. Lastly, the survey reflects varying perceptions regarding the awareness of disease prevention and management of inguinal hernia. A notable 67.3% of respondents feel that there is insufficient awareness, while 21.4% are uncertain, and only 11.3% believe that there is adequate awareness on the subject.

Table (4): Awareness level of inguinal hernia among athletes (n=459).

	Parameter	No.	Percent
Causes of inguinal hernia in opinion	Congenital.	117	25.5
	Obesity	155	33.8
	Weightlifting sport	309	67.3
	Weak abdominal muscles	278	60.6
	Pregnancy and Birth	196	42.7
	Abdominal surgery	166	36.2
	Smoking	83	18.1
	Chronic constipation	163	35.5
	Chronic cough	123	26.8
The best treatment for inguinal hernia	Pharmaceutical	12	2.6
	Lifestyle modification	157	34.2
	Surgery	290	63.2
Heard that inguinal hernia repair is best done with surgical mesh	Yes	247	53.8
	No	212	46.2
Complications after surgical treatment of inguinal hernia	The problem repeats	197	42.9
	Surgical site infection	191	41.6
	Chronic pain or discomfort in the affected area	207	45.1
	Nothing	95	20.7
The cause of recurrence of inguinal hernia	Reasons related to the gender and age of the patient	132	28.8
	Reasons related to the surgeon and surgical procedures	211	46
	Family history of inguinal hernia	132	28.8
	Reasons related to the site of surgery and the type of hernia.	246	53.6
	Smoking and chronic respiratory diseases	120	26.1
To prevent inguinal hernia	stop smoking	126	27.5
	Lifting weights the right way	254	55.3
	Go to the doctor if you suffer from one or more of (cough, dysuria, constipation, swelling of the abdomen or part of it)	371	80.8
There is sufficient awareness of disease prevention and management of inguinal hernia	Yes	52	11.3
	no	309	67.3
	maybe	98	21.4

According to the data in figure (1), 51 individuals, accounting for 11.1% of the total sample, are categorized as having high knowledge and awareness. The largest segment of the population, comprising 257 individuals or 56.0% of the total sample, is classified as having average knowledge and awareness. Lastly, 151 individuals, representing 32.9% of the total sample, are categorized as having low knowledge and awareness.

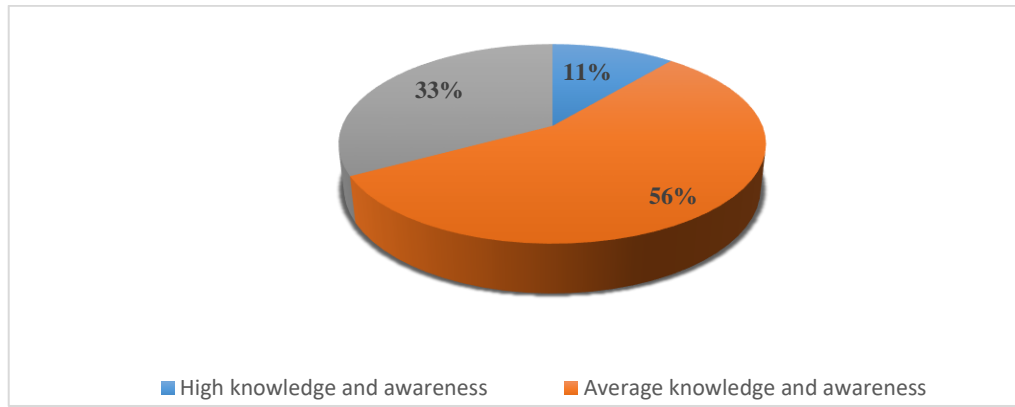


Figure (1): Knowledge and awareness Score of participants

Starting with the age parameter, in table (5) we observed that respondents aged 20-30 exhibit the highest knowledge scores, with 9.8% in the high knowledge category, 24.8% in the average knowledge category, and 10.2% in the low knowledge category. On the other hand, respondents aged less than 20 and those over 60 demonstrate lower knowledge scores, with the age parameter exhibiting significant association with knowledge score with p-values= 0.001. Moving on to marital status, the data reveals a notable disparity in knowledge scores between single and married individuals. Single respondents show a higher prevalence of high knowledge scores (10.2%) compared to married individuals (0.9%). The p-value of 0.001 indicates a statistically significant association between marital status and knowledge scores. Similarly, when considering gender, the data highlights a disparity in knowledge scores between males and females. Males exhibit a higher proportion of high knowledge scores (5.7%) compared to females (5.4%), with a p-value of 0.001, signifying a significant association between gender and knowledge scores. The location parameter also demonstrates variations in knowledge scores across different regions. Respondents from the West region exhibit the highest knowledge scores, with 10.7% in the high knowledge category, 33.8% in the average knowledge category, and 19.6% in the low knowledge category. The p-value of 0.001 suggests a statistically significant association between location and knowledge scores. Furthermore, the education level parameter showcases distinct knowledge score distributions among respondents with different educational backgrounds. Bachelor's degree holders display the highest knowledge scores, with 7.2% in the high knowledge category, 29.6% in the average knowledge category, and 20.9% in the low knowledge category. However, the p-value of 0.107 for the middle educational level indicated no significant association with knowledge scores. The number of children parameter reveals varying knowledge scores based on the number of children respondents have. Those with one to three children demonstrate higher knowledge scores compared to those with more children, as indicated by the p-value of 0.001. Finally, the number of hours spent practicing the specific sport per week parameter illustrates the impact of practice time on knowledge scores. Respondents who dedicate 1-2 hours per week to the sport exhibit higher knowledge scores, with a p-value of 0.029 signifying a significant association between practice time and knowledge scores.

Table (5): Association between sociodemographic characteristics and knowledge score (n=459).

Parameter		Knowledge score			Total (N=459)	P value
		High	Average	Low		
Age	less than 20	0	48	24	72	0.001
		0.00%	10.50%	5.20%	15.70%	
	20_30	45	114	47	206	
		9.80%	24.80%	10.20%	44.90%	
	31_40	2	23	30	55	
		0.40%	5.00%	6.50%	12.00%	
	41_50	2	30	30	62	
		0.40%	6.50%	6.50%	13.50%	
	51_60	0	28	12	40	
		0.00%	6.10%	2.60%	8.70%	
	more than 60	2	14	8	24	
		0.40%	3.10%	1.70%	5.20%	
marital status	Single	47	158	73	278	0.001

		10.20%	34.40%	15.90%	60.60%	
	Married	4	91	74	169	
		0.90%	19.80%	16.10%	36.80%	
	Divorced	0	8	4	12	
		0.00%	1.70%	0.90%	2.60%	
Gender	Male	26	112	101	239	0.001
		5.70%	24.40%	22.00%	52.10%	
	Female	25	145	50	220	
		5.40%	31.60%	10.90%	47.90%	
Location	East	0	32	5	37	0.001
		0.00%	7.00%	1.10%	8.10%	
	Middle	2	28	16	46	
		0.40%	6.10%	3.50%	10.00%	
	North	0	4	0	4	
		0.00%	0.90%	0.00%	0.90%	
South	0	38	40	78		
	0.00%	8.30%	8.70%	17.00%		
West	49	155	90	294		
	10.70%	33.80%	19.60%	64.10%		
Education Level	middle	0	10	2	12	0.107
		0.00%	2.20%	0.40%	2.60%	
	secondary	14	62	29	105	
		3.10%	13.50%	6.30%	22.90%	
	Bachelor's	33	136	96	265	
		7.20%	29.60%	20.90%	57.70%	
diploma	0	18	6	24		
	0.00%	3.90%	1.30%	5.20%		
Postgraduate	4	31	18	53		
	0.90%	6.80%	3.90%	11.50%		
Number of children	3-Jan	2	37	30	69	0.001
		0.40%	8.10%	6.50%	15.00%	
	6-Apr	2	46	28	76	
		0.40%	10.00%	6.10%	16.60%	
More than 6	0	10	12	22		
	0.00%	2.20%	2.60%	4.80%		
nothing	47	164	81	292		
	10.20%	35.70%	17.60%	63.60%		
Number of hours you spend practicing this sport per week	1-2 hours per week	28	155	85	268	0.029
		6.10%	33.80%	18.50%	58.40%	
	3-4 hours per week	6	57	36	99	
		1.30%	12.40%	7.80%	21.60%	
5-7 hours per week	13	25	24	62		
	2.80%	5.40%	5.20%	13.50%		
> 7 hours per week	4	20	6	30		
	0.90%	4.40%	1.30%	6.50%		

Table (6): Dichotomous variable with high and average knowledge (n=459).

Parameter		Knowledge score			Total (N=459)	P value
		High	Average			
Age	Less than or equal 40	232	101		333	0.001
		69.70%	30.30%		72.50%	
	more than 40	76	50		126	
		60.30%	39.70%		27.50%	
marital status	Single	213	77		290	0.001
		73.40%	26.60%		63.20%	
	Married	95	74		169	
		56.20%	43.80%		36.80%	
Gender	Male	138	101		239	0.001

		57.70%	42.30%		52.10%	
	Female	170	50		220	
		77.30%	22.70%		47.90%	
Number of hours you spend practicing this sport per week	Less than 3 hours per week	183	85		268	0.001
		68.30%	31.70%		58.40%	
	More or equal than 3 hours per week	125	66		191	
		65.40%	34.60%		41.60%	

Discussion:

Inguinal hernia is a common condition among athletes, particularly those who engage in high-impact or strenuous activities. In Saudi Arabia, the prevalence, knowledge, and awareness level of inguinal hernia among athletes is an important topic of discussion, as it can have significant implications for the health and well-being of this population [2].

The prevalence of inguinal hernia among athletes in Saudi Arabia is not well-documented, but it is known to be relatively high due to the nature of their physical activities. Athletes who participate in sports such as football, rugby, and weightlifting are particularly at risk for developing inguinal hernias due to the repetitive strain and pressure placed on the abdominal muscles and groin area. Additionally, the prevalence may be influenced by factors such as genetics, age, and previous injuries [8].

The knowledge and awareness level of inguinal hernia among athletes in Saudi Arabia is also an important consideration. Many athletes may not be fully aware of the symptoms, risk factors, and potential complications associated with inguinal hernias. This lack of knowledge can lead to delayed diagnosis and treatment, which can have a negative impact on their athletic performance and overall well-being [4].

Our study showed that participants had sufficient knowledge and awareness score levels regarding inguinal hernia among athletes, as nearly two thirds (67.1%) of participants exhibited high and average knowledge and awareness score levels. Another study showed that the evaluation of knowledge regarding Hernia reveals that the majority, 38%, rated their knowledge as Very Good, followed by 36% who rated it as Good, and the remaining 26% rated it as Excellent [11].

Our study showed that there was significant association between knowledge and awareness score and age, as participants falling in 20-30 age group exhibited the highest knowledge score (9.8%) among the remaining age groups, with p-values= 0.001. Similarly, another study showed that the correlation between the participants' level of awareness and their age was statistically significant. 23.2% of individuals with a high degree of awareness fell between the age group of 18-24 years. This could be attributed to the fact that a significant portion of participants consisted of university students with a p-value= 0.000 [12].

Our study revealed significant association between knowledge and awareness score and marital status, as single participants exhibited higher scores (10.8%) than the rest, with p-value= 0.001. Consistently, a study has identified a notable association between high levels of awareness and marital status. Specifically, the findings indicated that 26.5% of individuals with a good awareness level were single with a p-value= 0.000 [12].

Our study showed that education level had no significant association with knowledge and awareness score. In contrast to another study which showed that there was notable association between the level of awareness and education level. Specifically, 39.5% of individuals with a high level of awareness were found to possess a high level of education with a p-value= 0.004 [12].

Moreover, our study showed that there was significant association between number of children and knowledge scores, as participants who have no children exhibited higher knowledge scores with a p-value= 0.001. Similarly, another investigation found a significant association between high level of awareness and the number of children. Individuals without children had a higher level of awareness, representing 23.6% of the total population [12]. Perhaps this is due to the fact that the majority of the participants were single, in both studies, as we already discussed.

More than half of the participants (50.5%) agreed that inguinal hernia is related to lifting heavy things. On the other hand, a study conducted in 2015 stated that this concern still elicits debate. A recent comprehensive review found inconclusive evidence regarding the association between repeated heavy lifting, occasional heavy lifting, or a single strenuous lifting activity and the occurrence of a groin hernia [13]. It is important to mention that weightlifters do not have a higher occurrence of inguinal hernias. Additionally, it encompasses other contributing variables for inguinal hernias, such as a family history of the condition and a prior occurrence of a hernia [14].

Concerning pregnancy and labor as risk factors for inguinal hernia, our study showed that 34.2% of participants agreed on this statement, while only 5% said no. Another study showed consensus among the participants was that abdominal muscle weakening is the predominant factor contributing to hernia, while smoking was considered the least probable cause [12]. A thorough examination conducted in 2017 on the causes of inguinal hernias revealed that factors such as elevated intra-abdominal pressure, advanced age, male gender, connective tissue disorders, and a patent processus vaginalis are all risk factors for the development of a hernia [15].

It is important for athletes in Saudi Arabia to be educated about the signs and symptoms of inguinal hernias, as well as the importance of seeking medical attention if they suspect they may have developed one. Additionally, coaches, trainers, and medical professionals should be knowledgeable about inguinal hernias and be able to provide guidance and support to athletes who may be at risk [7].

Increasing awareness and knowledge about inguinal hernias among athletes in Saudi Arabia can help to improve early detection and treatment, ultimately leading to better outcomes for these individuals. This can be accomplished through educational initiatives, workshops, and outreach programs that aim to inform athletes about the risk factors, symptoms, and treatment options for inguinal hernias [3-5].

4. Conclusion:

In conclusion, the prevalence, knowledge, and awareness level of inguinal hernia among athletes in Saudi Arabia is an important issue that warrants attention. As our study revealed that participants had adequate knowledge, almost two third of the participants exhibited high and average knowledge score. By increasing awareness and knowledge about this condition, athletes can be better equipped to recognize and address inguinal hernias, ultimately leading to improved health and well-being within this population.

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Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

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Conflict of interests

The authors declare that there are no conflicts of interest.

Informed consent:

Written informed consent was obtained from all individual participants included in the study.

Data and materials availability

All data associated with this study are present in the paper.

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