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Knowledge and awareness about Congenital Umbilical and Inguinal hernias in infants and children and its complications among parent's in Madinah, Saudi Arabia

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ABSTRACT

Inguinal and umbilical hernias are very common in the pediatric age group, and they can be associated with severe complications. A congenital inguinal hernia (CIH) is an indirect hernia related to failure of closure of the patent processes vaginalis (PPV) at the deep inguinal ring. This study Knowledge and awareness about Congenital Umbilical and Inguinal hernias in infants and children and its complication among parent's Madina El Monawara, Saudi Arabia. Incidence and age at presentation the incidence of congenital inguinal hernia depends on age. The incidence is highest in premature infants. The incidence may be as high as 60% in infants born at 500 -750 g. Nearly one-third of infants with a birth weight less than 1000 g will develop an IH. Term infants have an IH incidence of 3e5%. The overall incidence of childhood inguinal hernia is 0.8 - 4.4%. Inguinal hernia repair is considered the most frequently performed pediatric surgical operation.

Study aims: To assessment of burden of the parent's Knowledge and awareness about Congenital Umbilical and Inguinal hernias in infants and children and its risk factor among parent's in Madina El Monawara.

Methods: A cross-sectional study was conducted in Madina El Monawara at Saudi Arabia in 2021. Data analysis was carried out using the Statistical Package for the Social Sciences (IBM SPSS) our total participants were (474).

Results: The study involved 474 participants from the Madina El Monawara population, distribution knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parent's show the majority of participant had weak were (46.8%) while average were(44.1%) the data ranged from(0-9) by mean ± SD (4.73 ± 2.1307).

Conclusion: A large number our study revealed lack of public knowledge on the predisposing factors for hernia among the study group regarding both congenital inguinal and umbilical hernias. This indicates that further studies are needed to clarify these conclusions. We recommend establishment of an awareness campaign for hernia risk factors among Saudi infants such as social media are required to raise awareness and improve knowledge, attributed hernias to both family history and premature birth. Over half were unaware of any risk factors or complications.

Key words: Knowledge, awareness, hernia, inguinal, umbilical, Madina El Monawara, Saudi Arabia

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INTRODUCTION

Hernias are a common public health issue; inguinal hernias are the most common among them. One of the most frequently performed operations worldwide is inguinal hernia repair. Inguinal and umbilical hernias are very common in infancy and childhood [1]. One of the most common pediatric surgical cases in primary care settings is inguinal hernias [2]. In routine baby visits during the first few months after birth, one of the common presentations is umbilical hernia [3]. Hernias can be identified as an organ or a tissue bulge or protrusion via a weakened anterior abdominal wall [4].

In the pediatric age group, the most common disorder in the inguinoscrotal area is inguinal hernias, while one common abdominal wall defect is umbilical hernias [5,6]. The prevalence of inguinal hernias in mature babies is around 1– 5% [1]. The male to female ratio is 5:1 [7,8]. In contrast, the incidence of umbilical hernia is hard to measure due to its benign condition. Therefore, patients rarely visit clinics for treatment [9]. However, in the United Kingdom (UK), there were 214 cases diagnosed by an umbilical hernia that showed an almost identical male to female ratio as 53% of the patients were male. In contrast, 47% were female [10]. One study suggested that umbilical hernias are especially common in the black population for unknown reasons [11].

Inguinal hernias can be classified into two main types, direct and indirect inguinal hernias. Indirect inguinal hernias are estimated to account for 99% of inguinal hernias in children [2,5]. Inguinal hernias tend to be more on the right side compared to the left or both sides [5,8]. Indirect Inguinal hernias happen when intra-abdominal structures pass through un fused processus vaginalis (patent processus vaginalis) [2,5]. Direct inguinal hernias are very rare in infants and children [2,3,5,12]. They occur when intra-abdominal contents herniate via a weakness in the canal's posterior wall, known as Hesselbach's triangle [2]. On the other hand, umbilical hernias occur when there's a defect in the closure of the umbilical opening after birth, which normally closed due to frequent interactions of lateral body wall folding in a medial direction, merging of the rectus abdominal muscles into the linea alba, and the contraction of the umbilical opening, which is facilitated by elastic fibers from the damaged umbilical arteries [13].

Regarding risk factors, age, gender, ethnicity, gestational age, and coexisting disorders are all factors that interfere with the occurrence of hernias in pediatric age groups. The incidence of inguinal hernias is higher in premature babies [2,5]. It's even more heightened with babies born in less than 32 weeks gestational age, accounting for 9.34% [5]. Male gender is considered as one of the major risk factors as the male to female ratio is 5:1 (7,8). Other potential factors for inguinal hernias include obesity and positive family history [4]. The complication of hernias includes strangulation and incarceration, both of which must be dealt with as emergency conditions [2,3,6,14]. Abdominal pain, nausea, and vomiting are common symptoms of an incarcerated or strangulated umbilical hernia [15]. It's rarely reported. But it must be excluded immediately to avoid serious complications such as intestinal perforation [3,14].

About 11.9% of inguinal hernias in infants and young children become incarcerated, and this percentage reaches 30% among infants under one-year-old [6]. A serious condition can be developed, including intestinal perforation, ovarian damage, and testicular atrophy [2,6]. Infants and children are more susceptible to testicular ischemia than adults due to the absence of collateral vessels that help with testicular perfusion [16]. The risk of testicular atrophy reached 30% in boys with incarcerated inguinal hernias, which may affect their fertility [6].

Management of hernias in pediatrics ranged from simple expectant management to an emergency surgical intervention. Uncomplicated hernias are the most common type of umbilical hernias. There is no need for surgical intervention as they tend to resolve spontaneously in the first five years of life. But complicated umbilical hernias (incarcerated or strangulated) need an emergency surgical intervention [3,17]. However, this does not apply to inguinal hernias, where surgical intervention is the only definitive treatment. Inguinal hernias can be surgically treated either by open surgery/Herniotomy or Laparoscopic surgery.

Three cross-sectional studies concerned the spread of knowledge or awareness about hernias in Saudi Arabia. One of the studies measured knowledge about inguinal hernias among the general Saudi population, showing that most of the study participants were not fully aware of the causes and management of hernias [3]. Another study measured awareness of hernias' risk factors among adults in Riyadh city [18] and another in Al-jouf region [18]. There is no similar study focused on measuring the knowledge and awareness of parents about congenital hernias, and no studies have been done in Madina El Monawara city specifically.

Rationale

According to the researcher's knowledge, There was no much research about the awareness and knowledge of congenital inguinal and umbilical hernias regarding definition, risk factors, complications, and management among parents as Madina El Monawara is one of the main cities in Saudi Arabia and contains a large population. The prevalence of inguinal hernias in mature babies is average in the pediatric age group, the most common disorder in the inguinoscrotal area is inguinal hernias, while one common abdominal wall defect is umbilical hernias.

Aim of the study

To measure the knowledge and awareness of parents in Madinah about congenital inguinal hernia and congenital umbilical hernia in infants and children in terms of definition, symptoms, risk factors, and complications

and management among parents in Madinah, Saudi Arabia.

Objectives

Our study aims to measure the knowledge and awareness of parents in Madinah about congenital inguinal hernia and congenital umbilical hernia in infants and children in terms of definition, symptoms, risk factors, and complications as Madinah is one of the main cities in Saudi Arabia and contains a large population.

SUBJECTS AND METHODS

Study design

A community-based cross-sectional study has be designed to assess the knowledge and awareness of parents about congenital umbilical and inguinal hernias regarding definition, risk factors, complications, and management in Madinah, Saudi Arabia. An online questionnaire has be translated to Arabic and published among the Madinah, population via social media. This questionnaire is going to be created using Google forms.

Study time frame

The study's time frame will be between Jan. 2021 and Sept. 2021. In the beginning, it is the preparation period for gathering the research team and selecting the research topic, which has be take a month. Then the period of writing the protocol and questionnaire to obtain ethical approval for the research has is done between Dec. 2021 and Apr. 2021. After that, we will start collecting the research sample by publishing the questionnaire among the target group through social media in May 2021. Finally, the period of writing the report.

Study population and sampling

The study targets the parents of Madinah residents. We aim to provide a sample of 1000 participants; however, the required sample size is at least 474 participants based on the population of Madinah in the official statisticsfrom the General Authority for Statistics.

Inclusion criteria

All parents who have children and live in Madinah willing to participate in the questionnaire have be included in the study.

Exclusion criteria

All participants who do not fulfill the inclusion criteria, including parents who do not live in Madinah and those who do not have children, has be excluded from the study.

Data collection instrument

An online structured questionnaire translated into Arabic has be used to collect the data from participants through social media. The questionnaire has be start with questions about parents' demographic data, including age, gender, residency, marital status, level of education, and the number of children. Then, the questionnaire will assess the participant's knowledge about congenital umbilical and inguinal hernias regarding the definition, risk factors, previous hernias experiences, family history, management, and complications. Open questions for the participants will be used for age and educational level, while the rest of the questions in the questionnaire will be closed-end questions regarding the rest of the topics. Finally, to avoid the misconception regarding the inguinal region, as the name of the inguinal region in Arabic is not widely known among the community, a picture (drawing) has be added in the questionnaire to clarify the intent of the inguinal region.

Statistical design

The data analysis has be carried out using IBM SPSS statistics for windows. Descriptive measures are going to be demonstrated by using frequency distribution and percentages. Knowledge responses about congenital umbilical and inguinal hernia have be associated with age, gender, marital status, level of education. It is going to be analyzed using the Chi-square test. 95% confidence intervals along with associated p-values will be presented. The alpha level has be set at 0.05.

Pilot study

Because of the uniqueness of the subject of our research, there was no valid questionnaire available from previous studies, so a meeting was held consisting of a group of medical students. After a prolonged discussion and research, the prototype of the questionnaire was developed and then presented to an assistant professor specializing in the same research topic (pediatric surgery) and all modifications and additions proposed by him were accepted. Then the questionnaire was presented to a sample of 40 participants from the target group (parents in Madinah), who found that the questionnaire was clear and understandable to them, and their answers were in line with our desired goals.

Budget

Self-funded.

RESULTS

Table 1 shows that majority of them were females (86.10%) while male(13.90%) most of the participants (45.40%) were in the age group 35-50 years follow by the (43.70%) were in the age <35 years, while Range 19-65, Mean ± SD(36.825 ± 8.649), also regarding Marital status the majority of participant married were(94.90%) regarding level of education the majority of participant Tertiary education were(56.0%) while Upper secondary education were(23.40%(. Regarding the Number of children the majority of participant3or more were (64.10%). While 2children were (21.30%).

Regarding the Do you know what is congenital inguinal or congenital umbilical the majority of participant, 50.6% know umbilical hernia only, but 24.5% know both umbilical hernia and inguinal hernia, while 21.9%, have

Table 1: Distribution of demographic data(gender, age, Marital status, Level of education, Number of children, smoking) in our study(n=474).

Category	N	%
Gender		
Male	66	13.90%
Female	408	86.10%
Age		
<35	207	43.70%
35-50	215	45.40%
>50	52	11.00%
Range	19-65	
Mean ± SD	36.825 ± 8.649	
Marital status		
Married	450	94.90%
Divorced	14	3.00%
Widow	10	2.10%
Level of education		
Non	4	0.80%
Primary education	11	2.30%
Lower secondary education	24	5.10%
Upper secondary education	111	23.40%
Post-secondary	16	3.40%
Tertiary education	308	65.00%
Number of children		
1	69	14.60%
2	101	21.30%
3 or more	304	64.10%

none of them were 3.0%.

Regarding the have you noticed any of your children exhibiting any of the following symptoms when they were between (1) month and (12) years old the majority of participant were (65.00%)of their children did not experience any of the symptoms of umbilical hernia or inguinal hernia. While you noticed Swelling in the umbilical area were (17.90%), regarding Are there any of your family members who suffered from congenital umbilical hernia or/and inguinal hernias when he/she was between one month to 12 years old the majority of participant were (63.00%) of their children did not experience any of the congenital umbilical hernia or/and inguinal hernias. While you noticed Umbilical hernias were (23.60%).

Regarding the what do you know about congenital umbilical hernia the majority of participant, were(41.40%) know It is a Mild condition, but need to see a doctor, but were (40.40%) It is a moderate condition and need to see a doctor. Regarding what do you know about congenital inguinal hernia the majority of participant were (43.90%) It is a moderate condition and need to see a doctor, while this is a serious condition that requires emergency medical intervention were(31.90%). Regarding you think that congenital umbilical and inguinal hernias can recur after treatment the majority of participant answer No were(45.10%) while Yes umbilical hernia only and, Inguinal hernia only were (36.30%), regarding do you think be inside the bulge in the inguinal hernia the majority of participant not know were(47.50%) while Part of the intestine were (16.50%), regarding you think be inside the bulge in the inguinal hernia the majority of participant were(47.50%) while Part of the intestine were (16.50%). Regarding do you think be inside the bulge in the umbilical hernia the majority of participant were (40.10%) not know, while Part of the intestine were(30.60%). Regarding you think there is a relationship between undescended testicle in children and inguinal hernia the majority of participant answer yes were (58.40%) while No were (41.60%) (Table 2). Table 3 Regarding distribution knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parent's show the majority of participant had weak were(46.8%) while average were(44.1%) the data ranged from(0-9) by mean ± SD (4.73+2.1307) (Figures 1 and Figure 2).

Table 4 show that is no significant relation between Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications and demographic data regarding age (increase in >50 years follow by <35 age) where F=1.499 and P-value=<0.224 by mean+ SD (5.019 ± 2.288, 4.841 ± 2.143). Regarding gender in our study the majority of our participants were noticed in male more than female with Mean ± SD (4.742 ± 2.668) with no significant relation between knowledge and gender were T=-0.051and P-value=0.959. No significant relationship between Knowledge of about Congenital Umbilical and Inguinal hernias in infants and children and its complications and Marital status (P-value=0.799) (increase in Widow Follow by Married) by mean+ SD (4.800 ± 2.394, 4.742 ± 2.668) where F=0. 2249. Regarding Level of education in our study

Table 2: Distribution the answers of the participant about knowledge and awareness about congenital umbilical and inguinal hernias in infants and children.

	N	%
Do you know what congenital inguinal or congenital umbilical is?		
Umbilical hernia only	240	50.60%
Inguinal hernia only	14	3.00%
Both umbilical and inguinal hernias	116	24.50%
None of the above	104	21.90%
Have you noticed any of your children exhibiting any of the following symptoms when they were between (1) month and (12) years old?		
Swelling in the umbilical area	85	17.90%
Swelling in the inguinal area	57	12.00%
Both	24	5.10%
None of the above	308	65.00%
Are there any of your family members who suffered from congenital umbilical hernia or/and inguinal hernias when he/she was between one month to 12 years old?		
Umbilical hernia	112	23.60%
Inguinal hernia	45	9.50%
Both	14	3.00%
None of the above	303	63.90%
What do you know about congenital umbilical hernia?		
It is a Mild cindition and does not require a visit to the doctor	26	5.50%
It is a Mild condition, but need to see a doctor	196	41.40%
It is a moderate condition and need to see a doctor	192	40.50%
This is a serious condition that requires emergency medical intervention	60	12.70%
What do you know about congenital inguinal hernia?		
It is a Mild condition and does not require a visit to the doctor	22	4.60%
It is a Mild condition, but need to see a doctor	93	19.60%
It is a moderate condition and need to see a doctor	208	43.90%
This is a serious condition that requires emergency medical intervention	151	31.90%
Do you think that congenital umbilical and inguinal hernias can recur after treatment?		
Yes, umbilical hernia only	70	14.80%
Yes, Inguinal hernia only	18	3.80%
Yes, Both	172	36.30%
No	214	45.10%
What do you think be inside the bulge in the inguinal hernia?		
Part of the intestine	78	16.50%
Ovaries (in females)	11	2.30%
Testicle (in males)	53	11.20%
Air	39	8.20%
Liquids	68	14.30%
I do not know	225	47.50%
What do you think be inside the bulge in the umbilical hernia?		
Part of the intestine	145	30.60%
Ovaries (in females)	5	1.10%
Testicle (in males)	7	1.50%
Air	63	13.30%
Liquids	64	13.50%
I do not know	190	40.10%
Do you think there is a relationship between undescended testicle in children and inguinal hernia?		
Yes	277	58.40%
No	197	41.60%

Table 3: Distribution of the knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parents.

Knowledge			Score	
	N	%	Range	Mean ± SD
Weak	222	46.8	0-9	4.73±2.1307
Average	209	44.1		
High	43	9.1		
Total	474	100		

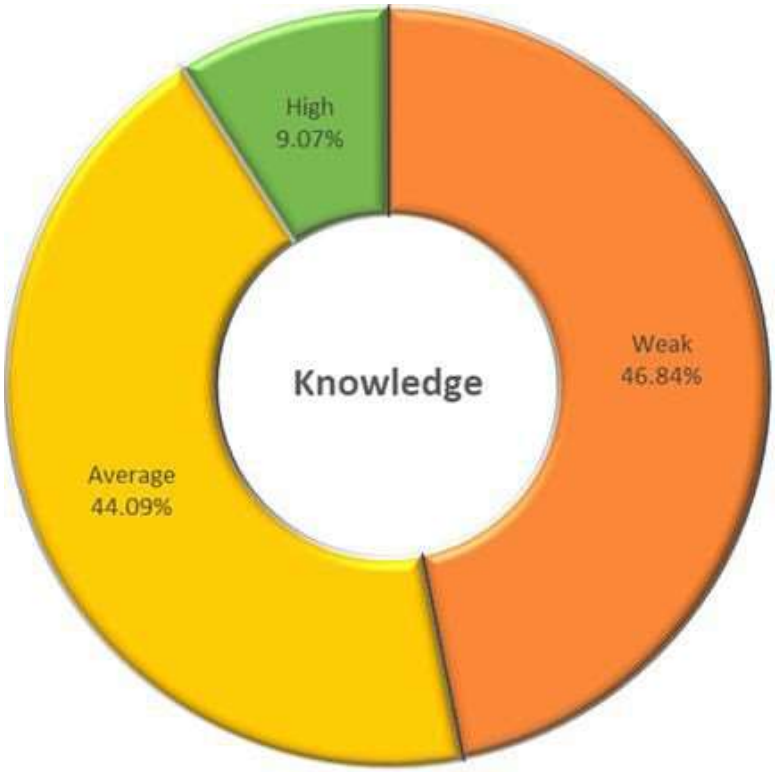

Figure 1: Distribution of the knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parents.

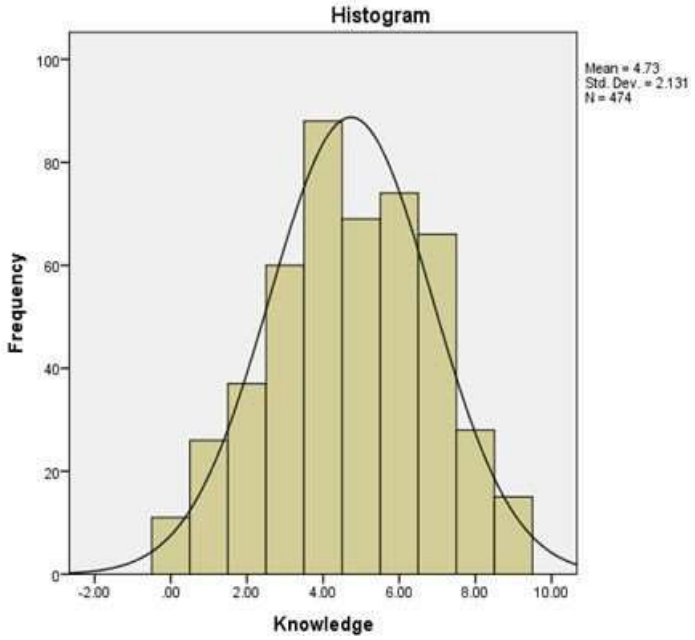

Figure 2: Distribution of the knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parents.

Table 4: Distribution the relation between Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications among parent's and demographic data (gender, age, Marital status, Level of education, Number of children, smoking) in our study.

		N	Knowledge	F or T	ANOVA or T-test	
			Mean ± SD		Test value	P-value
Age	<35	207	4.841 ± 2.143	F	1.499	0.224
	35-50	215	4.553 ± 2.075			
	>50	52	5.019 ± 2.288			

Gender	Female	408	4.728 ± 2.035	T	-0.051	0.959
	Male	66	4.742 ± 2.668			
Marital status	Married	450	4.74 ± 2.131	F	0.224	0.799
	Divorced	14	4.357 ± 2.061			
	Widow	10	4.8 ± 2.394			
Level of education	Non	4	5 ± 2.944	F	1.233	0.292
	Primary education	11	4.636 ± 1.433			
	Lower secondary education	24	4.125 ± 2.028			
	Upper secondary education	111	4.982 ± 2.106			
	Post-secondary	16	3.875 ± 2.277			
	Tertiary education	308	4.731 ± 2.145			
Number of children	One	69	4.623 ± 2.263	F	0.104	0.901
	Two	101	4.762 ± 2.196			
	Three or more	304	4.743 ± 2.084			

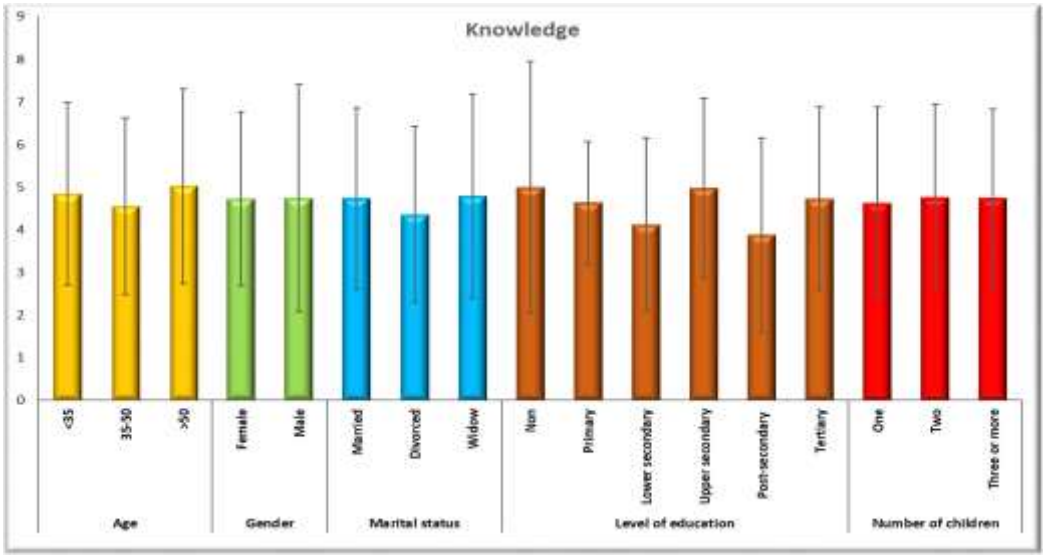

Figure 3: Distribution the relation between knowledge about congenital umbilical and inguinal hernias in infants and children and its complications among parent's and demographic data(gender, age, marital status, level of education, number of children, smoking) in our study.

no significant relation between knowledge and Level of education were F=1.233and P-value=0.292(increase in Upper secondary education follow by Married) by mean+ SD (4.982 ± 2.106). Regarding number of children in our study no significant relation between knowledge and number of children were F=-0.10 4and P-value=0.901 Mean ± SD (increase in Two) by mean+ SD (4.762 ± 2.196) (Figure 3).

DISCUSSION

The knowledge of the community regarding the congenital umbilical or inguinal hernia in Madina El Monawara has not previously been discussed. This study aimed to measure the knowledge and awareness of parents in Madinah about congenital inguinal hernia and congenital umbilical hernia in infants and children in terms of definition, symptoms, risk factors, and complications and management among parents in Madinah al-Monawara, Saudi Arabia. This study showed that most of our participants were females (86.10%), Tertiary education were(65.0%) with a mean age of (36.825 ± 8.649) that majority of them were females (86.10%) while male(13.90%) most of the participants (45.40%) were in the age group 35-50 years follow by the (43.70%) were in the age <35 years, while Range 19-65, Mean ± SD(36.825 ± 8.649), also regarding Marital status the majority of participant married were(94.90%) regarding level of education the majority of participant Tertiary education were(56.0%) while Upper secondary education were(23.40%) Regarding the Number of children the majority of participant3or more were (64.10%). While 2children were (21.30%) (Table 1).

Lee, et al. report that differentiation between congenital inguinal hernia and hydrocele in young children is not always straightforward. The well-known trans-illumination test is essential for distinguishing between the presence of a sac filled with fluid in the scrotum and the presence of bowel in the scrotal sac. [19,20] also similar our result the parents usually described a visible, intermittent swelling or bulge in the inguino-scrotal region in boys or inguino-labial region in girls appears with crying or straining, and usually it disappeared during night while the baby is sleeping. The swelling is usually not associated with pain or discomfort. But, sometimes,

the parents may perceive the bulge as being painful, which is not true as it in facts causes no discomfort to the baby except if complicated. The presence of a painful bulge should alert the pediatric surgeon to the presence of an incarcerated inguinal hernia [21].

In our study, we found difference in the answers of the participant about Knowledge and awareness about Congenital Umbilical and Inguinal hernias in infants and children, do you know what is congenital inguinal or congenital umbilical the majority of participant, 50.6% know umbilical hernia only, have you noticed any of your children exhibiting any of the following symptoms when they were between (1) month and (12) years old the majority of participant were(65.00%)of their children did not experience any of the symptoms of umbilical hernia or inguinal hernia. regarding Are there any of your family members who suffered from congenital umbilical hernia or/and inguinal hernias when he/she was between one month to 12 years old the majority of participant were(63.00%) of their children did not experience any of the congenital umbilical hernia or/and inguinal hernias. what do you know about congenital umbilical hernia the majority of participant, were(41.40%) know It is a Mild condition, but need to see a doctor, while what do you know about congenital inguinal hernia the majority of participant were (43.90%) It is a moderate condition and need to see a doctor, you think that congenital umbilical and inguinal hernias can recur after treatment the majority of participant answer No were(45.10%), regarding do you think be inside the bulge in the inguinal hernia the majority of participant not know were(47.50%), but you think be inside the bulge in the umbilical hernia the majority of participant were (40.10%) not know, you think there is a relationship between undescended testicle in children and inguinal hernia the majority of participant answer Yes were(58.40%)

most of the participants believed that having either inguinal or umbilical hernias is Mild condition, but need to visit a doctor, parents that believed in this decision were more than 41.40% of the number of participants, think it's a mild to moderate condition (Table 2).

Overall, there are obvious limitations of the Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications among parent's, knowledge distribution show the majority of participant had weak were(46.8%) while average were(44.1%) the data ranged from(0-9) by mean ± SD (4.73+2.1307) (Table 3).

The relation between Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications among parent's and demographic data(gender, age, Marital status, Level of education, Number of children, smoking) in our study overall, there no relation between Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications among parent's and demographic data(gender, age, Marital status, Level of education, Number of children, smoking) in our study. show that is no significant relation between Knowledge about Congenital Umbilical and Inguinal hernias in infants and children and its complications and demographic data regarding age (increase in >50 years) P-value=<0.224 by mean+ SD (5.019 ± 2.288, 4.841 ± 2.143), but gender in our study the majority of our participants were noticed in male more than female with Mean ± SD (4.742 ± 2.668) with no significant relation between knowledge and gender were P-value=0.959. also no significant relationship between Knowledge of about Congenital Umbilical and Inguinal hernias in infants and children and its complications and Marital status (P-value=0.799) (increase in Widow Follow by Married), the Level of education in our study no significant relation between knowledge and Level of education. While number of children in our study no significant relation between knowledge and number of children P-value=0.901 Mean ± SD (increase in Two) (Table 4).

Finally, our study found that there is a significant impairment in knowing what is inside the hernia. have a wrong idea about what is inside the hernia, whether umbilical or inguinal. We believe that educating the parents in this aspect will improve the overall knowledge regarding both types of hernias and make parents have a better perception of the condition, which will be reflected in increased care and improve the outcome.

CONCLUSION

In conclusion, our study revealed inadequate knowledge and awareness of congenital umbilical and inguinal hernias in a study group among parents of infants and children in Madina El- Monawara city. We found that less percentage of participants attribute hernias to family history and prematurity. In addition, more than half of the participants were unaware of any risk factors and complications. As a result, they require educational programs to raise awareness by increasing knowledge in the community. We recommend establishing awareness-raising campaigns at public places, also health centres in Madina El- Monawara, particularly Maternity and Children's Hospital. In addition, another method for health education is using social media.

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