

Assessment of level of knowledge about cryptorchidism and its complications among paternity age population in the western region of Saudi-Arabia. Cross-sectional Questionnaire based study

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Abstract

Background: Testicular descent failure causes cryptorchidism, which is the absence of one or both testicles in the scrotum. The cause of cryptorchidism is still unknown. This study aimed to assess knowledge about cryptorchidism and estimation of cryptorchidism in the Western region of Saudi Arabia.

Methods: A cross-sectional study was done on 427 participants through an electronic online questionnaire in the western region of Saudi Arabia. All parents with or without children, divorced or widowed, or widower were included.

Results: More than half of the participants (64.6%) were aged between 40 and 59 years. The prevalence of UDT was 8.4%. The mean knowledge score was 7.5 ± 3.3 ; out of a total score of 20 (Range 2 – 18). Most of the participants (69.8%) have poor knowledge about UDT, while only (30.2%) have good knowledge about it. There was a significant association between educational level and level of knowledge about UDT (p value = 0.006). There was a non-significant association between age (p value = 0.562) and marital status (p value = 0.457) and level of knowledge.

Conclusion: Our results concluded that people from the western region of Saudi Arabia showed insufficient knowledge regarding UDT. The prevalence of UDT was relatively high.

Keywords: assessment, awareness, cryptorchidism, parents, western, Saudi

Introduction

Cryptorchidism which is referred to as undescended testicles (UDT) is the absence of one or both testicles in the scrotum due to failure of testicular descent. It's considered one of the most common genitourinary conditions in neonates. Insulin-like 3 peptide and steroid hormones generated in testicular Leydig cells, as well as many genetic and developmental variables, influence the descent of the testes during development [1].

Normal testicular descent occurs in the 25th to 35th weeks of gestation [2]. Testicular descent is essential for spermatogenesis. Scrotal temperature differs by 2-4 degrees below body temperature [3]. There's a difference in incidence between full-term and pre-term infants. The prevalence of cryptorchidism is estimated between 1% to 4% in full-term infants however, it reaches up to 45% in pre-term infants [4]. Cryptorchidism's etiology is still unknown, and various possibilities have been offered. Placental malfunction with diminished hCG secretion, for example, could be the cause of hormonal and other problems during fetal development [5]. According to some studies, the testis could be the primary source of the problem [6].

Some risk factors that can predispose to the condition include prematurity, intrauterine growth restriction (IUGR), perinatal asphyxia, Cesarean section, and congenital subluxation of the hip [7]. Cryptorchidism may lead to serious complications if not diagnosed and managed accordingly. One of the acute complications is testicular torsion [8]. Chronic complications are infertility and testicular germ cell tumors (TGCT) mainly seminomas. Bilateral cryptorchidism has a higher cancer risk than unilateral cryptorchidism. Some studies have found a link between the length of time the testis was in a cryptorchid position and the likelihood of developing TGCT. The results of surgical correction of cryptorchidism and the reduction of the risk of testicular cancer demonstrate this [9]. Early surgical intervention is necessary to preserve fertility and prevent further complications. In early discovered palpable cryptorchid testes, hormonal therapy should be initiated first to encourage descent however, Orchidopexy is the gold standard treatment [10].

In a Swedish study conducted between 1964 and 1999, about 17,000 males were treated for cryptorchidism in Sweden, with an average age of 8.6 years at the time of surgery. Sixty-six people in this cohort acquired testicular cancer. Individuals who received corrective surgery before the age of 13 had a 2.23 percent incidence rate, whereas those who were treated after the age of 13 had a 5.4 percent incidence rate [11].

A study was conducted in Hail (Saudi Arabia) to measure the prevalence and causes of late presentation of the cases with this condition. The study showed that in terms of overall awareness of UDT, roughly 53.2 percent had heard of it. Age groups, gender, having a child with UDT, and knowing a child with UDT all showed statistically significant differences. However, there was no statistically

significant relationship between social and educational levels [4]. Another retrospective study was conducted to determine the mean age of presentation in patients with cryptorchidism. In a survey of 5,393 cases, only 0.98 percent of the general public knew about UDT, and none of them knew about the ideal age for orchidopexy. At the 1-4 month postnatal newborn check, healthcare providers informed 63.46 percent of them about the UDT. Furthermore, only 2% of healthcare providers were aware that the optimal age for orchidopexy was 6-9 months, and only 14.3% of them would make an immediate surgical referral to pediatric surgery at this time [12].

This study aimed to evaluate the overall knowledge about cryptorchidism and its prevalence among patients in the Western region of Saudi Arabia.

Subjects and Methods

Study design, allocation and timing: This was a cross-sectional study done in the western region of Saudi Arabia from June to September 2022.

Study population: The inclusion criteria were all parents of both genders, with or without children, divorced or widowed, or widower who live in the western region of Saudi Arabia and agreed to participate in the study. The exclusion criteria were any participant who is single and not living in the western region of Saudi Arabia.

Sample size: With a margin of error of 5% and a 95% confidence level, a minimum of 384 participants were required for this study. Using the Qualtrics calculator, the sample size was calculated.

Data collection: A self-administered, electronic online questionnaire was distributed to all parents in the western region of Saudi Arabia. A link to Google form was distributed using social media platforms (e.g., Twitter, Instagram, Linked-in, WhatsApp, ...etc.). A common grading method was used for each variable in this questionnaire as follows: 2 points were given to the correct option, 0 for the incorrect answer, and 1 for neutral. After data collection, a participant who correctly answered 50% or more of the questions (10 points out of 20) was considered as having good knowledge about UDT.

The questionnaire included five sections; the first was designed to gather information about the respondents (age, gender, education level, etc.). In the second section, respondents were asked whether they have experience caring for a child with UDT. In the third part, the general knowledge of UDT (age group and recommended time of intervention) was discussed. In the fourth part, the importance of early intervention and the treatment options were discussed. The last part focused on the complications that can occur with untreated UDT.

Data analysis: Data was entered on the computer using the "Microsoft Office Excel Software" program (2016) for windows. Data was then transferred to the Statistical Package of Social Science Software (SPSS) program, version 23 (IBM SPSS Statistics for Windows, Version

23.0. Armonk, NY: IBM Corp) to be statistically analyzed. Qualitative data were expressed in the form of numbers and percentages while quantitative data was expressed in the form of mean and standard deviation. Chi-square (χ^2) test was used to examine qualitative data between two groups. A p value < 0.05 was considered statistically significant.

Results

Characteristics of the respondents: a total of 427 participants were included in this study. In order to investigate the demographic data of responders more than half of participants (64.6%) were aged between 40 and 59 years; the majority of them are married (90.6%) and 91.1% have children. Regarding their educational level, most of them have a Bachelor's degree (66.3%). Concerning the geographic distribution of participants, we found that they are semi-equally distributed in Jeddah, Madina, Mecca, and Taif (Table 1).

Prevalence of cryptorchidism: While looking at the percentage of participants who have a child affected with UDT, the majority of participants haven't any child with UDT (91.6%) while only 36 (8.4%) have children affected with UDT (Figure 1).

Knowledge about UDT: Out of a total score of 20, the mean knowledge score was $7.5 \pm 3,3$ (Range 2 – 18). Regarding overview of knowledge about UDT, most participants (n=298, 69.8%) have poor knowledge about UDT, while only 129 (30.2%) have good knowledge about it (Figure 2).

Concerning participants' Knowledge about UDT half of participants had never heard about UDT (51.1%), and more than half of participants think the age of presentation with UDT is since birth (61.8%). Additionally, we found that (53.2%) of participants consider that UDT has complications, and most of them (68.7%) believe that this complication is infertility. Furthermore, our results revealed that the bulk of participants think that best management of UDT is surgery. Our results demonstrated that more than a third of participants don't know the suitable time for surgery while (22.5 %) think that the suitable time is one year and more. The majority of participants (69.3%) think that there is a real benefit from early treatment (Table 2).

Factors associated with Knowledge about UDT: When we were checking factors associated with knowledge about UDT we found that there's no significant association between age (P value = 0.562) or marital status (P value = 0.457) and level of knowledge, but there is a significant association between educational level and level of knowledge about UDT (P value = 0.006).

While assessing the association between the level of knowledge about UDT and places where participants live we found that there is no association between them (P value = 0.235). No significant association was found between having children and level of knowledge about UDT (P value = 0.094), as well as no significant association was found between the level of knowledge about UDT and the number of children affected by UDT (P value = 0.236) (Table 3).

Table 1: Socio-demographic characteristics of the respondents (n=427)

| Variable | Categories | Frequency | Percent |
|---------------------------|--------------------|-----------|---------|
| Age | 20-25 | 38 | 8.9% |
| | 26-39 | 96 | 22.5% |
| | 40-59 | 276 | 64.6% |
| | 60 years and above | 17 | 4% |
| Marital status | Married | 387 | 90.6% |
| | Divorced | 29 | 6.8% |
| | Widowed | 11 | 2.6% |
| Educational level | Elementary | 19 | 4.4% |
| | Secondary school | 54 | 12.6% |
| | Diploma | 26 | 6.1% |
| | Bachelor | 283 | 66.3% |
| | Postgraduate | 45 | 10.5% |
| Where do you live? | Jeddah | 91 | 21.3% |
| | Madina | 91 | 21.3% |
| | Mecca | 127 | 29.7% |
| | Taif | 118 | 27.6% |
| Do you have any children? | Yes | 389 | 91.1% |
| | No | 38 | 8.9% |

Figure 1: Prevalence of cryptorchidism among the study participants

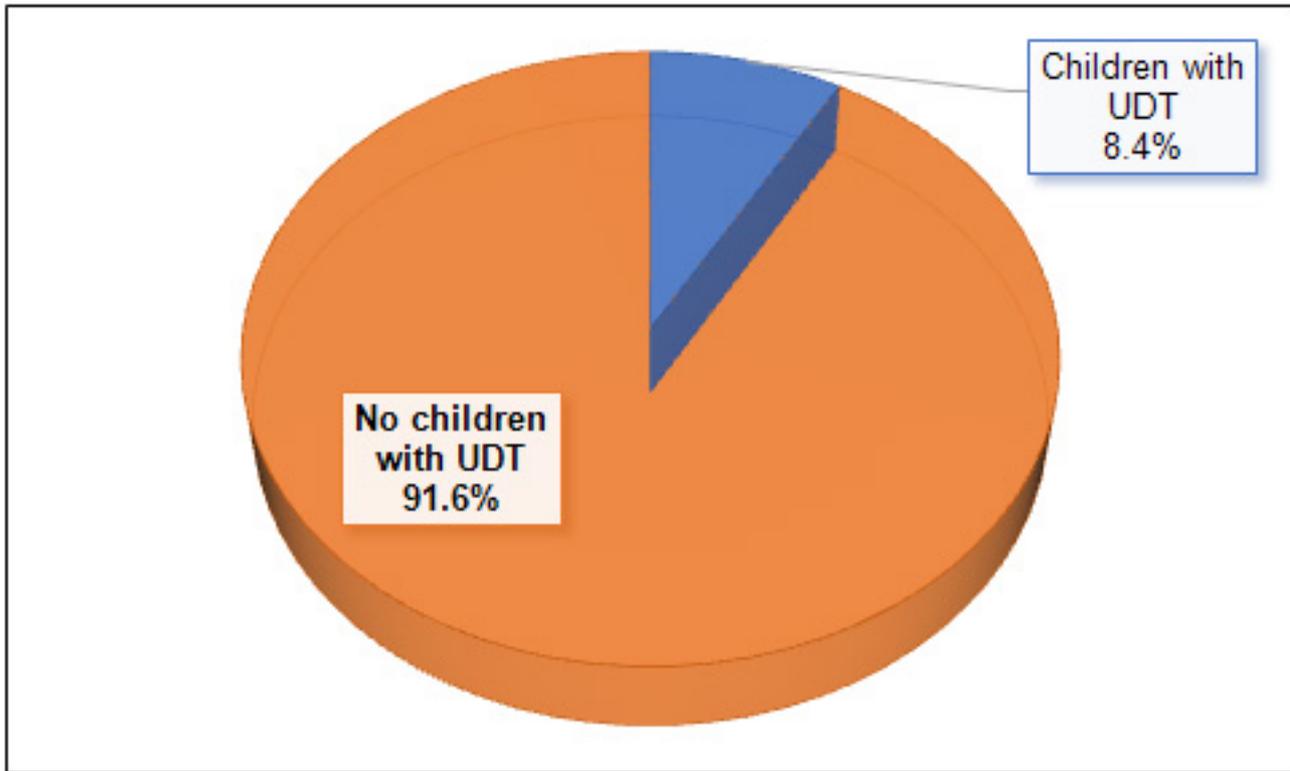


Figure 2: Overall knowledge about UDT

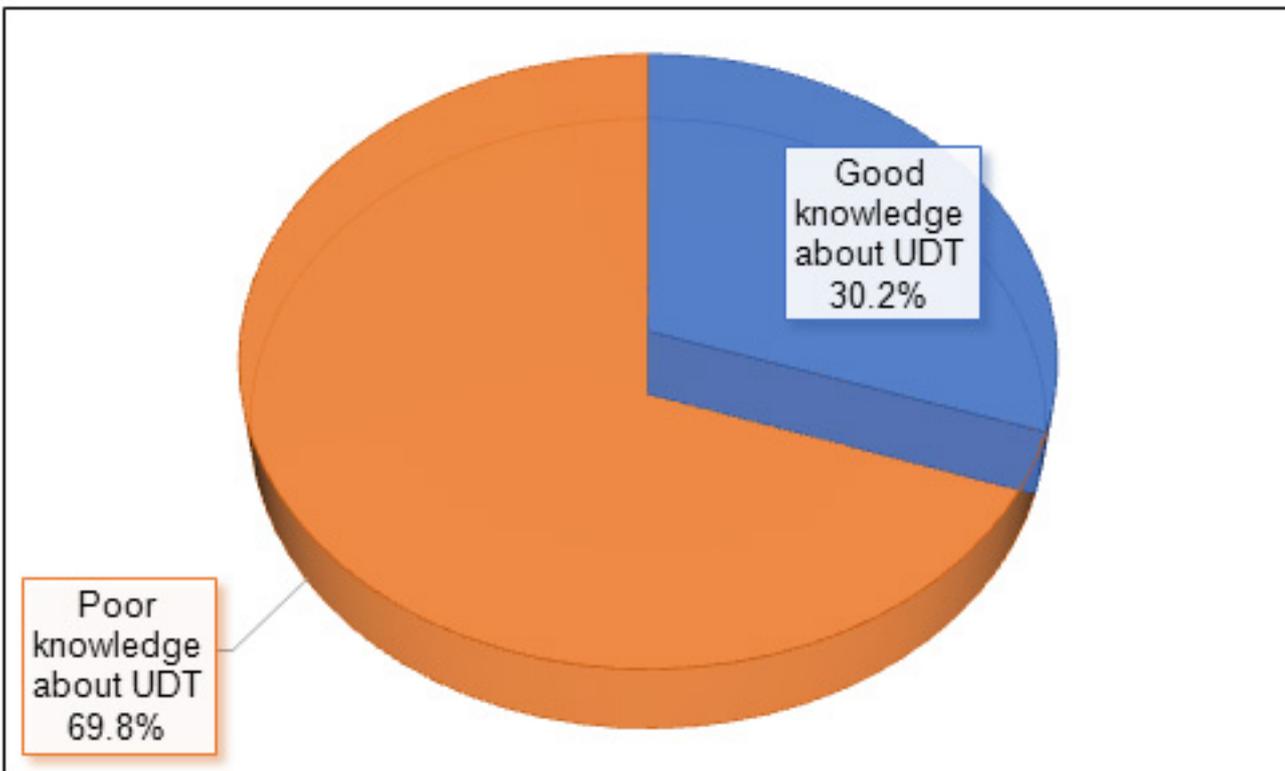


Table 2: Participants' Knowledge about UDT

| Variable | Frequency | Percent |
|---|-----------|---------|
| Have you heard about UDT? | | |
| Yes | 218 | 51.1% |
| No | 209 | 48.9% |
| In your consideration what age do you think patients with UDT present at? | | |
| Since birth | 264 | 61.8% |
| Adolescence | 31 | 7.3% |
| Elderly | 2 | 0.5% |
| I don't know | 130 | 30.4% |
| In your consideration do you think UDT has any complications? | | |
| Yes | 227 | 53.2% |
| No | 21 | 4.9% |
| I don't know | 179 | 41.9% |
| If you answered with yes, what are the complications you think will develop? (n=227) | | |
| Infertility | 156 | 68.7% |
| Inflammations | 101 | 44.5% |
| Testicular torsion | 78 | 34.4% |
| Tumors | 43 | 18.9% |
| I don't know | 24 | 10.6% |
| In your consideration which treatment option do you think can manage UDT? | | |
| Oral medications | 43 | 10.1% |
| Hormone therapy | 17 | 4% |
| Surgery | 281 | 65.8% |
| Does not need any therapy | 14 | 3.3% |
| I don't know | 133 | 31.1% |
| What time is appropriate for surgery | | |
| After birth directly | 45 | 10.5% |
| 1 st 6 months | 83 | 19.4% |
| 6 months – 1 year | 64 | 15% |
| One year and more | 96 | 22.5% |
| I don't know | 139 | 32.6% |
| Do you think that there is a benefit from early treatment? | | |
| Yes | 296 | 69.3% |
| No | 4 | 0.9% |
| I don't know | 127 | 29.7% |

Table 3: Factors associated with Knowledge about UDT

| Variable | Categories | Level of Knowledge | | P value |
|---|------------------|--------------------|------------|---------|
| | | Good | Poor | |
| | | N (%) | | |
| Age | 20-25 | 15 (39.5) | 23 (60.5) | 0.562 |
| | 26-39 | 27 (28.1) | 69 (71.9) | |
| | 40-59 | 81 (29.3) | 195 (70.7) | |
| | Above 60 years | 6 (35.3) | 11 (64.7) | |
| Marital status | Married | 114 (29.5) | 273 (70.5) | 0.457 |
| | Divorced | 10 (34.5) | 19 (65.5) | |
| | Widowed | 5 (45.5) | 6 (54.5) | |
| Educational level | Elementary | 3 (15.8) | 16 (84.2) | 0.006 |
| | Secondary school | 9 (16.7) | 45 (83.3) | |
| | Diploma | 3 (11.5) | 23 (88.5) | |
| | Bachelor | 97 (34.3) | 186 (65.7) | |
| | Postgraduate | 17 (37.8) | 28 (62.2) | |
| Where do you live? | Jeddah | 34 (37.4) | 57 (62.6) | 0.235 |
| | Madina | 28 (30.8) | 63 (69.2) | |
| | Mecca | 31 (24.4) | 96 (75.6) | |
| | Taif | 36 (30.5) | 82 (69.5) | |
| Do you have any children? | Yes | 113 (29) | 276 (71) | 0.094 |
| | No | 16 (42.1) | 22 (57.9) | |
| Do you have any children affected by UDT? | Yes | 14 (38.9) | 22 (61.1) | 0.236 |
| | No | 115 (29.4) | 276 (70.6) | |

Discussion

The current study aimed to measure the overall knowledge of cryptorchidism and to estimate the prevalence of the disease among the general population in Saudi Arabia. One of the most common congenital disorders in males is cryptorchidism. It has been reported that undescended testis (UDT) affects 1.0-4.6% of full-term infants [13]. There is debate about the best way to treat an undescended testis, with surgical and medical options commonly offered. However, everyone agrees that cryptorchidism should be treated as soon as possible [14].

The current study discovered that more than half of the participants (64.6%) were between the ages of 40 and 59. This age distribution was older than in another study conducted in Saudi Arabia's Hail region [4]. However, like our study, this study revealed a high educational level with a majority of participants holding a Bachelor's degree.

Our results demonstrated that the Prevalence of cryptorchidism was found to be 8.4 %, whereas the vast majority of our respondents revealed that their children were not affected by cryptorchidism. Unfortunately, there have been no studies on the prevalence of UDT in Saudi Arabia. The frequency of UDT varies according to the literature. The actual frequency of acquired UDT is

essentially unknown due to a lack of studies performed at older ages and studies reporting on previous testicular position. A previous systemic review found a lower prevalence than our study, which found that the UDT rate in premature and or birth weight 2.5 kg infants ranged from 1.1 to 45.3%. UDT in term and or birth weight >2.5 kg infants was seen in 1.0-1.5% of boys at 1 year, 0.0-2.6% at 6 years, 0.0-6.6% at 11 years, and 1.6-2.2% at 15 years. This indicates that the population's age and prematurity would have an impact on the study's findings [15].

Our results revealed that (69.8%) of respondents have poor knowledge about UDT, while only (30.2%) have good knowledge about it. Almost half of the participants had never heard about UDT. This is slightly higher than another study that was conducted in Saudi Arabia which reported that 46% had not heard about cryptorchidism before [4]. Moreover, our findings showed that more than half of participants think the age of presentation with UDT is since birth (61.8%). An earlier study in Saudi Arabia reported that 45% of the population has no idea about the typical age of presentation [4]. We found that (53.2%) of participants consider that UDT has complications, and most of them (68.7%) believe that this complication is infertility. This is confirmed by a previous study in Saudi Arabia [4]. More than a third of participants don't know the suitable time for surgery while (22.5 %) think that the suitable time is one year and more. The majority

of participants (69.3%) think that there is a real benefit from early treatment. Another study in Iran showed better results than our study which revealed that 49% of parents had the correct information for proper operation age and 40.6% of them had enough information about the necessity of surgery and side effects of disease [16].

Our results showed that there is a significant association between educational level and level of knowledge about UDT (p value = 0.006). This was inconsistent with findings of another study in Saudi Arabia which demonstrated that educational status was not statistically significantly related to level of knowledge about UDT. Furthermore, this previous study revealed another inconsistency with our findings, namely that a statistically significant difference was observed between age groups, gender, having a child, or knowing a child with UDT [4].

Our research had some limitations. Our study is limited by its retrospective nature, small sample size, and lack of generalizability.

Limitations

A limitation of this study was the usage of self-administered online questionnaire which was prone to recall bias. This study was planned to collect data from parents in the western region of Saudi Arabia which may not represent the total number of parents in Saudi Arabia.

Conclusion

Our results concluded that people from the western area of Saudi Arabia showed insufficient knowledge regarding UDT. The prevalence of UDT was relatively high. Further studies and research are needed. Future interventions showed focus on raising awareness of the general population. Education of society, particularly parents, as well as careful physical examination of babies at birth and regular follow-up until 18 months, can help to prevent UDT diagnosis and treatment delays.

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