

# Level of Knowledge of Testicular Torsion among Clinical Officers Working In Tier Three Hospitals in Kiambu County, Kenya

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## ABSTRACT

**Objectives:** The study sought to determine the level of knowledge of testicular torsion among clinical officers working in tier three hospitals in Kiambu County.

**Design:** A cross-sectional descriptive study design was used and collected using questionnaires. The questionnaires were sorted, coded and keyed in SPSS version 22 for the quantitative data analysis. The knowledge level of the clinical officers was assessed on different aspects as far as management of testicular torsion is concerned.

**Results:** Majority of the clinical officers expressed low knowledge on diagnosis of high riding and horizontal lie in acutely painful scrotum. 59% of clinical officers said the scrotum to be elevated and 20% recommended broad-spectrum antibiotics. The clinicians expressed a lack of understanding of the relationship between Prehn's sign and testicular torsion.

**Conclusion:** Sample clinical officers had at least a diploma in clinical medicine, which is a minimum requirement for being a practitioner. Knowledge on various aspects of testicular torsion varies from low to average as some expressed less knowledge of testicular torsion. Continuous Medical Education in all aspects of testicular torsion conditions is recommended.

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## I. INTRODUCTION

Testicular torsion (TT) results from the inadequate fixation of the testes within the scrotum, which allows excessive movement of the testes within the scrotum<sup>[1]</sup>. The testes' abnormal attachment is called Bell Clapper deformity and is often bilateral<sup>[1]</sup>. Exploratory detorsion can save eighty percent (80%) of testicular torsion cases if performed within 6hrs. The survival rate of the testis decreases to less than 20% if done beyond 12hours, left with the only option of surgical removal of the Testis-Orchiectomy<sup>[2]</sup> If surgical detorsion is not possible, manual detorsion can be done if TT is detected within 4-6 hours.

Globally, Testicular torsion presents a surgical emergency that affects every 1 in 4,000 boys aged below 25<sup>[3]</sup> and contributes to 25% of severe scrotal pediatrics conditions. Testicular torsion causes considerable morbidity in the pediatric population, but the burden in society is poorly quantified<sup>[4]</sup>.

A retrospective study done from January 2007 to June 2015 involving Forty-five patients by<sup>[5]</sup>, in Nigeria on intermittent testicular torsion (ITT) noted that the condition is underreported<sup>[6]</sup>, with few cases of adult ITT reported<sup>[7]</sup>. In males aged below 18, TT's annual incidence rate is 38 %<sup>[8]</sup>. TT is responsible for 5–25% of the acute painful scrotum in children, and delayed diagnosis of the condition may result in the loss of testicles<sup>[8]</sup>.

In Kenya, local data on the prevalence of testicular torsion is limited<sup>[9]</sup>.

This study's purpose was to determine whether the knowledge level, management practices, and attitudes (KAP) of clinical officers in Kiambu hospitals are adequate for testicular torsion management. The objective was to establish the level of knowledge of testicular torsion among clinical officers working in Tier Three Hospitals in Kiambu County, Kenya.

Testicular torsion refers to a surgical emergency entailing the twisting of the spermatic cord along a longitudinal axis, resulting in limited testicular blood flow. The onset of severe scrotal pain is a clinical marker

of testicular torsion with subsequent scrotal swelling, vomiting, and nausea. Physical examination often finds a high-riding testis with a transverse lie. The findings may co-exist with absent cremasteric reflex, which are a hint of testicular torsion<sup>[10]</sup>.

Testicular torsion necessitates ready knowledge to diagnosis and treatment, to salvage the testis if one within six hours. The condition causes testicular pain in boys aged between 12 and 18 years<sup>[11]</sup>.

In a study on boys with acute scrotal pain and noted that accurate history and physical checkups should be the first step before deciding on radiographic or surgical evaluation. The aim of the study was to establish the best predictors of testicular torsion and identify the standard of physical examination and history of boys' acute scrotal pain<sup>[12]</sup>.

In a study done in Nigeria by<sup>[5]</sup> *onintermittent testicular torsion, there researcher concluded that horizontal testicular lie was the chief cause of intermittent testicular torsion. The condition affected more of the left than the right testis and is often unilateral. Occurrences of intermittent testicular pain together with abnormal testicular lie call for the diagnosis of intermittent testicular torsion. Undertaking advance bilateral orchidopexy is valuable*<sup>[5]</sup>. A positive diagnosis of intermittent torsion was made due to recurrent scrotal pain, absence of urinary symptoms, the incidence of an unusual testicular lie in otherwise normal testicles, and negative urine cultures.

A study in Nigeria teaching hospital at Enugu between January 1999 and December 2009, on 59 testicular torsion found out that there was a late presentation of intermittent testicular torsion pre- and intra-hospital phases<sup>[13]</sup>. The researchers noted physician/health worker and community enlightenment improved the testicular salvage rate<sup>[13]</sup>.

A retrospective study done in Kenya in two hospitals, Coast General Hospital (a level 5 hospital) in Mombasa and Moi County Hospital in Voi, found that there was low salvage of testis after testicular torsion<sup>[14]</sup>.

Out of the 29 patients operated on for acute testicular torsion included in the study, only four cases had viable testes salvage (salvage rate of 14%), while seven had bilateral orchidopexy due to occasional testicular torsion. However, three patients had orchidopexy of the contralateral testes because of missed torsions that resulted in total testicular atrophy. Surgical exploration was done on two patients diagnosed with epididymo-orchitis, one being a testicular torsion of excised appendix testis. There was no case of testicular torsion after orchidopexy. The study concluded that testicular torsion salvage rates were low in the setup and recommended more public awareness and education targeting clinicians, parents, teachers, adolescents, and adult males on the consequences of severe scrotal pain<sup>[14]</sup>.

A study done 2018 between October 2005 and June 2016 concluded that Physicians/clinicians should be on the lookout for the specific clinical manifestations of TT<sup>[15]</sup>. The study objective was to evaluate testicular torsion manifestations that accompany severe abdominal pain and increase understanding of the condition with accompanying symptoms<sup>[15]</sup>.

## **II. MATERIALS AND METHODS**

The research design was a cross-sectional descriptive design. The research tools included questionnaires both structured, unstructured questions, closed and open-ended questions which were a total of 34 questions. The questionnaires were hand delivered to the study participants/respondents. Duly filled questionnaires were collected the same day 1 hour or 2 hours after delivery of the questionnaires. The study took place in Kiambu county, and included 13 level-5 and level 4 hospitals, 3 level 5 hospitals (Kiambu, Gatundu, and Thika) and 10-level four hospitals as shown in table 1. Study participants were 130 General Clinical Officers working in the above 13 hospitals distributed in the entire Kiambu county. The study excluded Clinical Officers who are not directly involved in the management of the patients. The reason being that they were not likely to be involved in the management of young males with acute scrotal pain.

The researcher collected and analyzed data without manipulation. The study aimed at analyzing data available to come up with critical conclusions. Likert Scale was included in questionnaires for assessment of attitude and opinions. Linear regression model was used for inferential statistical analysis.

All the thirteen tier three hospitals were purposefully involved in the study. All the 130 General Clinical Officers attending to patients in the sampled hospitals were included in the sample size.

## **III. RESULTS**

The study target population of clinical officers and the critical personal information sought was highest level of education, name and facility based and cases of acute scrotum pain presented to the health facility to the clinician in a span of one month.

#### IV. Knowledge Level

##### Provisional Diagnosis in with high riding testes and Horizontal lie with acutely painful scrotum

Regarding the question on provisional diagnosis for young boys with high riding testis and horizontal lie with acutely painful scrotum; Epididymitis, Orchitis, Testicular Torsion, Epididymoorchitis are the common diagnosis as demonstrated in figure 4.2.

Simple Bar Percent of Provisional diagnosis in boys with riding testes and horizontal lie with acutely painful scrotum

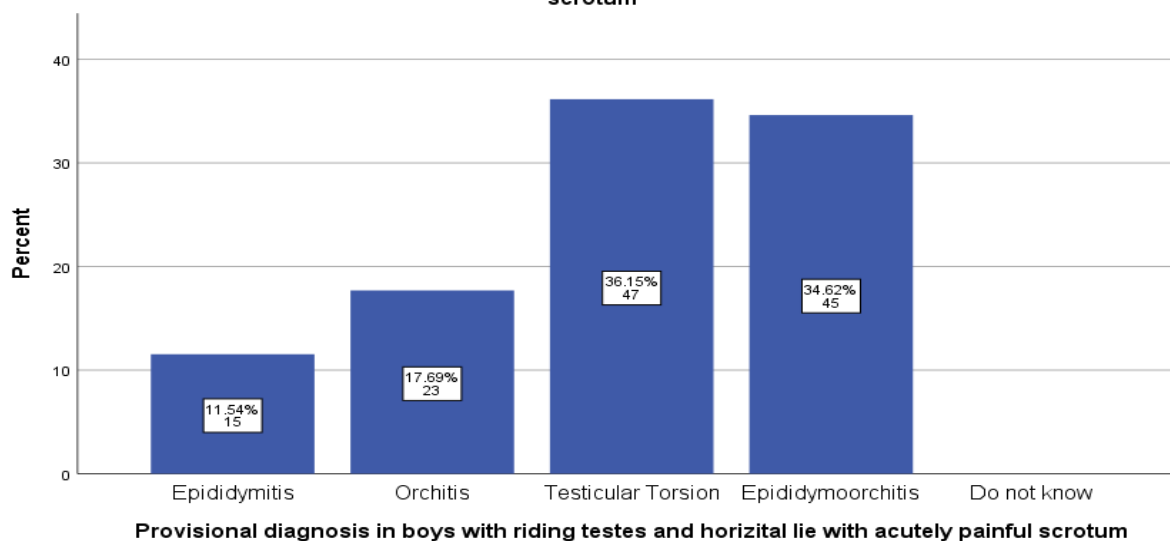


Figure 1: showing clinical officer provisional diagnosis in boys with high riding testes and horizontal lie with acutely painful scrotum

Study findings indicate that 11.54% (n=15) of the clinical officers were of the view that such cases be diagnosed as epididymitis. In this case of high riding testes and horizontal lie with acutely painful scrotum, 17.68% (n=23) were of the view that it is likely to be Orchitis. 36.15% (n=47) of the clinical officer were of the opinion that such symptoms are of testicular torsion diagnosis while 34, 62% (n=45) indicated that they would diagnosis the patient as Epididymitis. In regarding findings, respondents demonstrated average understanding of testicular torsion. However, a considerable portion of the COs noted that provisional diagnosis for such signs is epididymitis (34.62% n=45). This is largely attributed to epididymitis having similar signs as testicular torsion hence the confusion. It should be noted that the correct diagnosis in this case is TT. Misdiagnosis as epididymitis will end up with mismanagement by giving broad-spectrum antibiotics instead of referral for surgery (surgical exploratory detorsion). It should be noted that 63. % n=83 of the COs made wrong diagnosis.

Management of a young boy with acute onset of scrotal pain with absent cremasteric reflex.

A question was posed to the clinicians about the management of patient who present with acute onset of scrotal pain without cremasteric reflex. In response, table 2 tabulates the results.

Table 2: Showing Management of a boy with acute onset of scrotal pain with absent cremasteric reflex

Management	Frequency	Percent
Broad-Spectrum Antibiotics	27	20.8
Attempt manual Detorsion	15	11.5
Prescribe analgesics and tell the patient to come back after 2 days if no improvement	11	8.5
Apply scrotal support to elevate the testis	77	59.2
Total	130	100.0

From table 2 (20.08% n=27) of the clinical officers would prescribe broad-spectrum antibiotics for the Management of acute onset of scrotal pain with absent cremasteric reflex, 11.5% (n=15) of COs recommended attempt of manual detorsion. This the correct management. More than 88% of the COs had wrong management of the condition. 59.2 % (n=77) of the clinical officers suggested the application of scrotal support to elevate the testes which will make the condition worse. About management of a boy with acute onset of scrotal pain with absent cremasteric reflex, the clinical officers have demonstrated low level of knowledge as far as the relationship of TT and cremasteric sign is concerned.

Further, clinical officers were asked about the likely cause of excruciating pain after testis raising. Table 3 presents the likely impression of worsening sudden acute pain after testis raising.

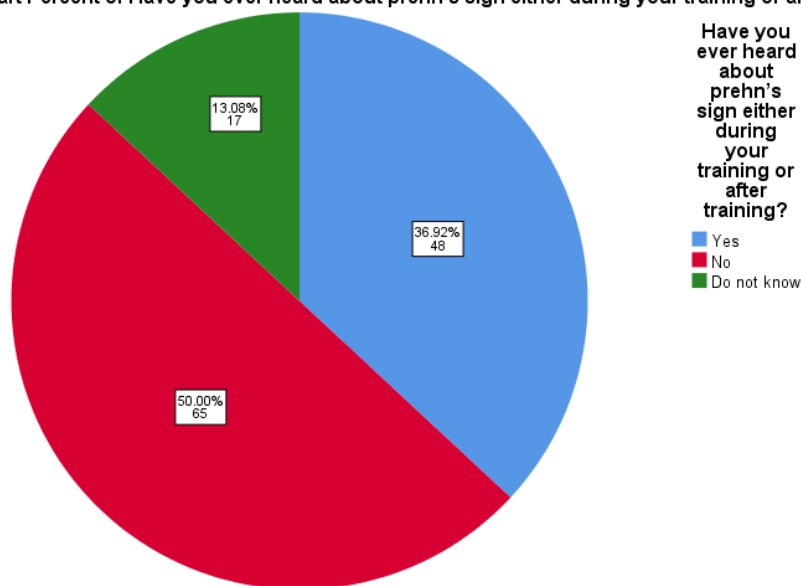
**Table 3: Showing likely impression of sudden acute scrotal pain on raising testis**

Indicator	Frequency	Percent
Epididymitis	4	3.1
Orchitis	7	5.4
Testicular Torsion	95	73.1
Epididymoorchitis	22	16.9
Do not know	2	1.5
<b>Total</b>	<b>130</b>	<b>100.0</b>

Findings shows that 3.1% (n=4) of the clinicians attributed to the unbearable pain to epididymitis diagnosis, 5.6% (n=7) associated the pain to Orchitis condition while 73.1 % ( n=95) and 16.9 % ( n=22) linked the pain to testicular torsion and epididymitis respectively. The responses show testicular torsion as the main cause of worsening pain in teens with acute scrotal pain on raising the testis. Therefore, for the male individuals who experiences more pain on raising the scrotum, the condition is mostly likely testicular torsion, and the epididymitis as the differential diagnosis, which may have similar signs and / or symptoms. In as much as a great percentage of the respondents are able to relate the signs to testicular torsion(TT), there is still a section of clinical officers (26.9% n=35) who have expressed low understanding of testicular torsion in relation to raising of the testis.

Clinical officer’s awareness about Prehn’s sign during or after training

**Pie Chart Percent of Have you ever heard about prehn’s sign either during your training or after training?**



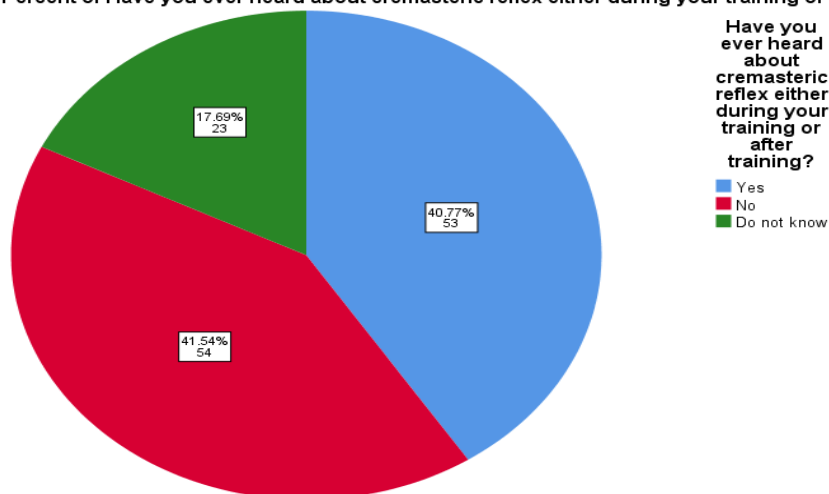
**Figure 2: Showing Clinical officer’s awareness about Prehn’s sign during or after training**

Figure 2 indicate that 36.93% (n=48) of the clinical officers are aware of pen’s sign, 50.0% (n=65) indicated that they had no idea of Prehn’s sign while 13.08% (n=17) said they do not know. Therefore, a greater portion of respondents (63%, n=82) demonstrated lack of knowledge on prehn’s sign. Clinical officers demonstrated low level of knowledge on the concept of Prehn’s sign. This has been associated with lack of coverage of the concept during and after training.

**Figure 3: Awareness about cremasteric reflex**

Awareness of the respondents about cremasteric reflex either during or after training was tested. Figure 3 shows the results of awareness of cremasteric reflex by clinical officers.

**Pie Chart Percent of Have you ever heard about cremasteric reflex either during your training or after training?**



**Figure 4: Showing respondent's knowledge about cremasteric reflex either during or after training**

Study results indicate that only 40.77% (n =53) of the respondents were aware of cremasteric reflex, whether they covered during training and after training. Many of the clinical officers (59.23% n=77) are not aware of the cremasteric reflex. There is less than half of the respondents of up to 40.77% who had an idea or some knowledge about the cremasteric reflex. This points to lack of knowledge on cremasteric reflex by the clinical officers. This may be due to lack of coverage of the aspect of cremasteric reflex during their training programmes especially in relationship to TT.

**Table 4: Relationship between Prehn's sign and testicular torsion**

Aspect	Frequency	Percent
Yes	20	15.4
No	3	2.3
Do not know	107	82.3
<b>Total</b>	<b>130</b>	<b>100.0</b>

From table 4, 15 % (n=20) of the clinical officers demonstrated that there is a relationship between Prehn's sign and testicular torsion. However, majority of the COs had no idea. This particularly, explain the low of knowledge of TT conditions among COs.

Further, a study was done to establish whether clinical officers covered testicular torsion in their basic training. A greater portion of the respondents 85.4% (n =111) had covered concept of testicular torsion during their basic training. Nonetheless, about 14% said not to have covered the concept. Usually, ideas are bridged from what is obtained from the reading or research materials. Based on the findings, a bigger percentage of the COs (82.3%) could not comprehend the relations between Prehn's sign and testicular torsion.

This is a worrying trend in the management of the testicular torsion.

**Table 5: Showing Testicular torsion coverage during basic training**

	Frequency	Percent
Yes	111	85.4
No	11	8.5
Cannot remember	8	6.2
<b>Total</b>	<b>130</b>	<b>100.0</b>

Continuous medical education (CME) is essential program that help COs get updated knowledge and learn about current developments and conditions that affect human health. Therefore, in the interest of the researcher to establish whether testicular torsion was covered during clinical officers' CMEs. Results as per table 5COs basic training covered the concept of testicular torsion. Therefore, low level of knowledge of COs on testicular torsion could not be attributed to their basic training.

**The researcher sought to determine whether CME programs are in place on testicular torsion. Table 6 tabulate the results.**

**Table 6: Clinical officers' attendance of CME (Continuous Medical Education) on Testicular Torsion**

Category	Frequency	Percent
Yes	65	50.0
No	55	42.3
Cannot remember	10	7.7
<b>Total</b>	<b>130</b>	<b>100.0</b>

From table 6, 50% have attended continuous medical education to further their understanding in torsion. 42 percent indicated that they have not attended any CME to sharpen their skills and understanding of testicular torsion cases. From the platforms of education, there are various policies to push forward and certain initiatives especially those touching on the health sector. Through the various programmes such as the continuous medical education, it is possible for professionals, i.e. clinical officers to get platforms to enhance their knowledge. In the study, a better fraction of the numbers of up to 50% had attended the continuous medical education on testicular torsion, thus implying that they had been subjected to knowledge. However, the remaining fraction (50%) of the population had not attended CMEs programmes. This explains their low level of comprehension of testicular torsion aspects.

## V. DISCUSSION

The study sought to determine knowledge, attitude, and management of testicular torsion among clinical officers in tier three hospitals in Kiambu County, Kenya. The sample comprised 130 clinical officers. The study achieved a 100% response rate as all the distributed questionnaires were duly filled and returned. The knowledge level of the clinical officers was assessed on different aspects as far as management of testicular torsion is concerned. The common diagnoses for boys who presents with acute scrotal pain, are testicular torsion and Epididymitis. Majority of the clinical officers more than 50% reflected low knowledge of TT presenting signs.

Regarding the management of scrotal pain with absent cremasteric reflex, 59% of clinical officers said the scrotum to be elevated and 20% recommended broad-spectrum antibiotics while others suggest manual detorsion, prescription of analgesics and follow up to monitor progress. However, more than half the COs (59.2% n=77) recommendations are not the proper management of TT. Testicular torsion is serious condition that would need immediate surgical intervention in case manual detorsion fails. This is a reflection low knowledge of TT presenting signs. This eventually leads to poor management of the patient. This calls for CMEs on TT management in all health facilities in the county.

The study findings correspond to those of (Nasr et...al., 2020) which notes that acute scrotal excruciating pain is common in young boys. Scrotal pain can be caused by a variety of things, including testicular torsion, infection, trauma, and even less common reasons such malignancies. Because testicular torsion is a leading cause of testicular infarction, prompt evaluation is essential to save the testis within 12 hours after diagnosis and confirmation.

A question "in a young boy with sudden acute scrotal pain, on raising the testis makes it worse, likely impression is?" the majority of the respondents indicated that could be signs of testicular torsion. This expresses their average understanding of the testicular torsion condition in male teens.

An elevation to determine the cause of testicular pain is known as Prehn's sign. It is usually performed by lifting the scrotum and evaluating the changes in pain. In respect to this aspect, 50% of the clinical officers expressed a low level of knowledge about Prehn's sign. This is further confirmed by respondents noting that they do not know about the relationship between Prehn's sign and testicular torsion.

On cremasteric reflex, (59.23% n=77) of the clinical officers said to have not heard about the cremasteric reflex. This is largely attributed to a lack of coverage of the concept during or after training. Thus the low level of understanding TT.

## VI. CONCLUSIONS

Based on the study findings the following conclusions are made; all the hospitals sampled admitted at least a case of testicular torsion during the time of the study. This calls for CMEs on TT in order to salvage the testis within 6hours after onset scrotal pain in male teens. Regarding knowledge, sample clinical officers had at least a diploma in clinical medicine, which is a minimum requirement for being a practitioner. However, it can be concluded that knowledge on various aspects of testicular torsion varies from low to average as some expressed less knowledge of some signs of testicular torsion. It is worth noting that the level of knowledge is much significant in specific management of testicular torsion cases. The researcher recommends Awareness creation in the presentation of scrotal affecting young males, as it would help them come and seek medical attention before it is too late (before 6hrs expires after any acute scrotal pain). The researcher also recommends

Manual detorsion be taught and encouraged to be done by COs in the most professional way in any suspected TT in case surgical exploratory detorsion is not immediately possible (within 6hrs).

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