

Research Article

PREVALENCE STUDY ON INDIRECT INGUINAL HERNIA IN ADULT MALES IN RIVERS STATE UNIVERSITY TEACHING HOSPITAL

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Abstract

**Background:** Indirect inguinal hernia is the protrusion of whole or part of the abdominal viscera into the inguinal canal through the deep inguinal ring. It is among the most common surgical cases worldwide. It is due to a congenital anomaly in which there is a patency in the processus vaginalis after the descent of the testis. **Aim/Objectives:** The aim of this study is to determine the prevalence rate of indirect inguinal hernia in adult males in Rivers State University Teaching Hospital. The objectives of the study are to determine the prevalence of age, side distribution and risk factor. **Method:** This was a retrospective study done in Rivers State University Teaching Hospital where 67 folders of patients diagnosed of indirect inguinal hernia in six months in 2021 were analyzed. Included subjects were from 18 years and above. The work was fully approved by the Rivers State University Teaching Hospital Research Committee. All-important informations were gotten using data collection sheet. Data were analyzed using descriptive statistics and hypotheses were tested using Chi square test. **Results:** Showed the highest occurring age group to be (58-67) years, mean of 44.7±15.8 years, most prevalent side to be at the right at 71.6% and most prevalent risk factor being weight lifting at 44.7%.The main factors which caused indirect inguinal hernia were increased intra-abdominal pressure and weakness of the muscle. The prevalence study of indirect inguinal hernia should not be over looked, it should be carried out annually so as to know if there will be significant changes.

**Keywords:** Indirect inguinal hernia, Prevalence rate, Prevalence of age, Side distribution, Risk factor, Increased intra-abdominal pressure.

INTRODUCTION

An inguinal hernia is the protrusion of the abdominal viscera from the abdominal cavity through the inguinal canal is called an inguinal hernia.<sup>[1]</sup>The inguinal canal is a passage through the lower abdominal wall which extends from the superior iliac spine to pubic tubercle, in males, the spermatic cords pass through the inguinal canals and connect to the testicles while in females, the round ligaments, which support the uterus, pass through the inguinal canals.<sup>[2]</sup> Inguinal hernia repair is therefore one of the most common operations in surgical practice and they constitute an important public health problem<sup>1</sup>. In the occurrence of inguinal hernia research has shown that 98% are males while 2% are females<sup>[3]</sup>. Indirect hernias are the most common with about two third of inguinal said to be a congenital<sup>[4]</sup> It is caused usually due to patency of the processus vaginalis, the stalk of the processus vaginalis fails to obliterate during fetal development, it causes a patency at this site, this causes the abdominal viscera to easily slide into the inguinal canal through the deep inguinal ring<sup>[5]</sup> In females when the processus vaginalis fails to close it forms the canal of Nuck which enters into the inguinal canal through the deep ring and the abdominal viscera follows this canal and this causes an indirect hernia.<sup>[6]</sup>Inguinal hernias present with a lump in the groin that goes away with minimal pressure or when the patient is lying down<sup>[2]</sup> Further investigations such as ultrasonography (US), computed tomography (CT), and magnetic resonance imaging (MRI) are carried out in cases of complications and uncertainty<sup>[7]</sup>. It is treated surgically by laparoscopy, hernioplasty<sup>[8]</sup>

MATERIALS AND METHODS

A retrospective study where 67 folders of male patients presenting with indirect inguinal hernia in six months in 2021 in Rivers State University Teaching Hospital were analyzed. The inclusion criteria were men aged 18years and above. Simple random sampling technique was used were folders of patients diagnosed of indirect inguinal hernia were taken randomly. Cases of direct inguinal hernia were excluded Ethical approval was gotten from the research and ethics committee of the hospital. The hernia was grouped into two; unilateral and bilateral. All necessary data on occupation and life style were collected using a data collection sheet. The data was analyzed using descriptive statistical method and chi square test was used to test the hypothesis with  $p < 0.005$  considered statistically significant

**Parameters:** Age, Sex, Occupation, Smoking, Alcoholism, Family history, Constipation, Cough, Sports activities.

RESULTS

Table 1. Age distribution of patients

Age group	Number of patients	Percentage (%)
18-27	11	16.41
28-37	16	23.8
38-47	8	11.9
48-57	12	17.9
58-67	17	25.3
68-77	2	2.98
78-87	1	1.4

Table 1 showed that the largest occurring age group (58-67) at 25.3% followed by (28-37) at 23.8%. Mean age (range 18-87 years) was 44.7±1.9.

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**Table 2. Side distribution of indirect inguinal hernia**

Side	Number of occurrence	Percentage (%)
Right	48	71.6
Left	15	22.3
Bilateral	4	5.9

Table 2 shows the side distribution with the right-side herniation most prevalent at 71.6%, followed by the left side at 22.3% and bilateral at 5.9%.

**Table 3. Risk factors of indirect inguinal hernia**

	Risk factor	Number of patients	Percentage (%)
Increased intra-abdominal pressure	Cough	16	23.9
	Weight lift	30	44.7
	Labor jobs	7	10.4
	Sports	9	13.4
	Constipation	13	19.4
Weakness of abdominal wall	Alcoholism	23	34.4
	Smoking	14	20.8
	Old age (>50years)	11	16.4
Others	Family history	9	13.4

Table 3 shows the risk factors with weight lifting in increased intra-abdominal pressure at 44.7% and alcoholism in weakness of abdominal muscles at 34.4%.

**Table 4. Comparison of present study with previous studies**

Investigator, year	Country	Prevalent age group	Mean $\pm$ SD	Prevalent side distribution	Prevalent risk factors
Ashindoitiang et al., 2012	Nigeria (Lagos)			Right	Manual labor
Sayanna, (2015)	India (Telengana)	41-50	-	Right	Manual labor
Balamaddaiah et al (2016)	India (Andhra Pradesh)	46-60	-	Right	Manual labor
Rahul et al, (2016)	India (Andhra Pradesh)	46-60	-	Right	-
Ramji et al, (2019)	India	40-60	56.5 $\pm$ 13.27	Right	-
Ogbuanya et al., (2020)	Nigeria (South East)			Right	Manual labor
Jhaet al, (2020)	India	31-40	-	Right	Manual labor
Yuan et al., 2021	America (Massachusetts)	50-70		Right	Tobacco and alcohol
Present study	Nigeria	58-67	44.7 $\pm$ 15.8	Right	Manual labor

## DISCUSSION

### Age distribution

In this study the results presented showed that the leading age group was (58-67) at 25.3%. This could be generally due to weakness of the muscles as a result of old age. The study mean age was 44.7 $\pm$ 15.8. The second leading age group was (28-37) years at 23.8%, Data gotten shows that this age group were more active in work, sports and weight lifting, these factors increased intra-abdominal pressure thus making an impact in the rate of prevalence.

**Table 4:** shows the comparisons of age distribution of the present study with that of previous studies. The most prevalent age group in the present study was (58-67) years, showing remarkable difference when compared to previous studies done. studies<sup>[9, 10, 11, 12, 13]</sup>

The differences in the age group could be as a result of different lifestyles and activities in the different populations, thereby affecting the age at which the hernia occurs.

### Side distribution

The most prevalent side in the present study is the right at 71.6%. Research has proposed that the right-side dominance of the hernia could be due to the late descent of the right testis and more frequent failure of closure of right processes vaginalis.<sup>14</sup>

The liver at the right side of the abdomen may also play a role in more frequent right side herniation. The side distribution agrees with previous studies done.<sup>[9, 10, 11, 12, 13, 14, 15, 16]</sup>

### Risk factors

This study results showed that increased intra-abdominal pressure was the leading cause of indirect inguinal hernia with the following major contributing factors: Cough 23.9%, constipation 19.4%, weight lifting 44.7%, labor demanding jobs 10.4% and sports 13.4% led to increase in pressure.

**Table 3** shows the risk factors with weight lifting increased intra-abdominal pressure at 44.7% and alcoholism in weakness of abdominal muscles at 34.4%. This result corresponds with previous studies done<sup>[9, 10, 12, 15, 16, 17]</sup> where the prevalent risk factors was manual labor which might have contributed to the increased intra-abdominal pressure and thus led to indirect inguinal hernia. Constant lifting of weighty object will cause an increased in intra-abdominal pressure, the transversus abdominis contracts and compresses thus pulling the fibers of the transversalis fascia creating a high tension on the fascia.<sup>18</sup> Continuous intra-abdominal pressure will cause increase pressure on the abdominal viscera thus causing it to push into the patent processus vaginalis to reduce the pressure leading to an indirect inguinal hernia. Fascia.<sup>[19]</sup> The results showed that the second leading Risk factor in this study was weakness of abdominal wall which could be as a result of old age (>50) 16.4%, alcoholism 34.4% and smoking 20.8%. From the study Alcoholism had a higher percentage of 34.4% followed

by Smoking with a percentage 20.8%, which is similar with a previous study done<sup>[16]</sup> Studies have stated that heavy drinking of alcohol leads to alcoholic myopathy which is characterized by severe atrophy and muscle distinction.<sup>[20]</sup> Tobacco causes toxicity in the body, weakening collagen fibers in connective tissues. It reduces the level of oxygen blood to the muscles and tissues leading to degeneration, also inhibiting protein synthesis.<sup>[21]</sup> Family history showing 9% of the cases. This may be as a result of patent processus vaginalis or inherited comorbid illness, this certainly will affect the development of an indirect inguinal hernia.

### Recommendation

Studies on inguinal hernia should be done annually to study prevalence and other risk factor to monitor significant changes. More studies should be done globally to determine how lifestyles and development of a country affects the risk factors that causes inguinal hernia

### Conclusion

Indirect inguinal hernia is indeed common and related to age. The main factors triggering it being increased intra-abdominal pressure and weakness of the abdominal wall. Patent processus vaginalis can thus be present without clinical symptoms and can occur at later age when certain risk factors come into play.

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**Conflict of interest:** Authors declare that they do not have any conflict of interest.

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