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Research Article

### A CROSS-SECTIONAL STUDY ON THE INGUINAL HERNIA WITH HEAVY WEIGHT LIFTING, COPD AND DIFFERENT RISK FACTORS

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**Abstract:**

**Objective:** The aim of this study was to determine the prevalence of different risk factors in patients of inguinal hernia and to determine the association of main risk factors with inguinal hernia

**Material and Methods:** It is a cross-sectional Study comprised on 71 patients came to outdoor surgical rooms and also on those who got admission to surgical wards of Services Hospital Lahore and the duration of this study was from January 2020 to July 2020. All the patients were clinically diagnosed to be suffering from inguinal hernia. Prevalence and association were evaluated by calculating the percentages and by applying chi-square test, respectively.

**Results:** Out of total 71 Patients with inguinal hernia 30.99% were having heavy weight lifting as a major risk factor and 29.57% were having COPD or smoking as main risk factor. Heavy weight lifting was most common among younger age groups i.e., from 20-50 years, 43.75% patients in these age groups were having heavy weight lifting as a risk factor and Smoking or COPD was main risk factor for older age groups i.e., from 51-65 years, 43.47% patients in these age groups were having smoking or COPD as a major risk factor. For age groups between 20-50 years Correlation co-efficient for Heavy weight lifting turned out to be; Correlation coefficient= $r=0.958$ , this shows that inguinal hernia patients in age group 20-50 years were 95.8% correlated to heavy weight lifting risk factor alone. For age groups between 51-65 years Correlation co-efficient for COPD or Smoking turned out to be; Correlation coefficient= $r=0.94$ , this shows that inguinal hernia patients in age group between 51-65 years were 94% correlated to COPD or Smoking risk factor alone.

**Conclusion:** There is a need to take necessary measures to create awareness for smoking cessation as it is strongly associated with inguinal hernia in elderly patients. There is also a need to implement laws for the rights of laborers and factory workers as they are involved in jobs comprised of heavy weight lifting and are composing a major portion of patients with hernia.

**Keywords:** Smoking, Inguinal hernia, Risk factors for Hernia, abdominal

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**INTRODUCTION:**

A hernia is the exit of an organ, such as the bowel, through the wall of the cavity in which it normally resides. By far the most common hernias up to 75% of all abdominal hernias are the so-called inguinal hernias [1]. Inguinal hernias are further divided into the more common indirect inguinal hernia 2/3, depicted here, in which the inguinal canal is entered via a congenital weakness at its entrance the internal inguinal ring [2], and the direct inguinal hernia type 1/3, where the hernia contents push through a weak spot in the back wall of the inguinal canal. Inguinal hernias are the most common type of hernia in both men and women. However, direct inguinal hernia occurs more commonly in males above age 40 years.

Increasing number of hernia patients are putting burden on general surgery wards in Pakistan where already the healthcare facilities are not sufficient for the population [3], so there is a need to identify the major risk factors and to determine the association of different risk factors with Inguinal hernia so we can minimize the number of the patients so we can provide best possible facilities to the remaining patients [4]. Lahore city Is the 3<sup>rd</sup> largest city of Pakistan, it has 2<sup>nd</sup> largest hospital of the province of Punjab where people not only visit from Lahore alone but also from nearby areas.

**MATERIALS AND METHODS:**

The study was conducted in Services Hospital Lahore and the duration of this study was from January 2020 to July 2020. The sample consisted of 71 patients comprising of 2 females and 69 males with the following inclusion and exclusion criteria, Age more than 20 years, Age less than 65 years and Clinically

diagnosed cases of inguinal hernia. And the exclusion criteria for this study was, Age less than 20 years, Age more than 65 years, Congenital hernia and Patients with Ascites. Demographic data included name, age, gender, occupation. Only those patients were included whose confirm diagnosis was inguinal hernia, along with diagnosis primary or recurrent hernia was marked in every patient. Risk factors were divided into following categories; Smoking or COPD, Only those smokers were included in this category that had a minimum of 5 pack year smoking history, Straining or Benign prostatic hyperplasia, For obesity BMI was calculated by measuring weight and height of every patient by the help of formula; Patients with BMI more than 30 kg/meter squares were labeled obese, Almost all patients with heavy weight lifting as a risk factor were factory workers, laborers or weight lifters who were lifting heavy objects for more than 5 days a week, Most of the risk factors mentioned above were involved in increasing the intra-abdominal pressure in human beings [5]. Statistical analysis was done carefully by the help of SPSS version 19 to find out distribution of inguinal hernia among different age groups, for these 5 age groups in total were formed starting from 20 years and ending at 65 years, gender wise distribution was also calculated in terms of percentage. In different age groups there was one specific major risk factor found in a specific age group while the remaining risk factors were the minor risk factors for the given age group. Demographic variables and Risk factor variables were compared against inguinal hernia for significant association. Correlation co-efficient was calculated to evaluate the quantitative association among main risk factors and inguinal hernia.

**RESULTS:****Table 1: Age Wise Distribution of Hernia Patients**

Age(years)	Number of Patients	%age of Patients
20-30	8	11.26 %
31-40	18	25.35 %
41-50	22	30.98 %
51-60	12	16.9 %
61-65	11	15.49

**Table: 2 Prevalence of Different Risk Factors Among Inguinal Hernia Patients of Age Group 20-30 Years**

Risk factor	Number of Patients	%age
Heavy Weight Lifting	4	50%
COPD or smoking	2	25%
Constipation	0	0%
Straining (BPH)	0	0%
Obesity	1	12.5%
More than 1 risk factors	1	12.5%
Other risk factors	0	0%

**Table 3: Prevalence of Different Risk Factors Among Inguinal Hernia Patients of Age Group 31-40 Years**

Risk factor	Number of Patients	%age
Heavy Weight Lifting	7	38.8%
COPD or smoking	4	22.22%
Constipation	0	0%
Straining (BPH)	0	0%
Obesity	3	16.6%
More than 1 risk factors	3	16.6%
Other risk factors	1	5.5%

**Table 4: Prevalence of Different Risk Factors Among Inguinal Hernia Patients of Age Group 41-50 Years**

Risk factor	Number of Patients	%age
Heavy Weight Lifting	10	45.45%
COPD or smoking	5	22.72%
Constipation	1	4.5%
Straining (BPH)	3	13.63%
Obesity	1	4.5%
More than 1 risk factors	2	9%
Other risk factors	0	0%

**Table 5: Prevalence of Different Risk Factors Among Inguinal Hernia Patients of Age Group 51-60 Years**

Risk factor	Number of Patients	%age
Heavy Weight Lifting	1	8.3%
COPD or smoking	6	50%
Constipation	1	8.3%
Straining(BPH)	3	25%
Obesity	1	8.3%
More than 1 risk factors	0	0%
Other risk factors	0	0%

**Table 6: Prevalence of Different Risk Factors Among Inguinal Hernia Patients of Age Group 61-65 Years**

Risk Factor	Number of Patients	%Age
Heavy Weight Lifting	0	0%
COPD or smoking	4	36.36%
Constipation	2	18.18%
Straining (BPH)	2	18.18%
Obesity	3	16.66%
More than 1 risk factors	0	0%
Other risk factors	0	0%

**Table 7: Gender Wise Distribution of Inguinal Hernia Patients**

Gender	Number of Patients	%Age
Male	69	97.25%
Female	2	2.75%

Qualitatively It is evident from the above data that different risk factors are somehow associated with Inguinal hernia, among those Heavy weight lifting and COPD or Smoking were more prevalent than the rest of the risk factors. To determine quantitatively how much these two major risk factors are closely associated with inguinal hernia we have calculated Correlation coefficient for the major risk factors, as

heavy weight lifting was more prevalent in the first three age groups i.e., from 20-50 years so we calculated correlation coefficient of heavy weight lifting in hernia patients for the patients that were lying in 20-50 years of age. Similarly, COPD or Smoking was more prevalent in inguinal hernia patients of last two age groups i.e., from 51-65 years so we calculated correlation coefficient of COPD or

Smoking for the patients that were lying in 51-65 years of age. Correlation coefficient= $r=0.958$ , this shows that inguinal hernia patients in age group 20-50 years were 95.8% correlated to heavy weight lifting risk factor alone. Correlation coefficient= $r=0.94$ , this shows that inguinal hernia patients in age group between 51-65 years were 94% correlated to COPD or Smoking risk factor alone.

### DISCUSSION:

Inguinal hernias account for 75% of abdominal wall hernias, with a lifetime risk of 27% in men and 3% in women [6]. Repair of inguinal hernia is one of the most common operations in general surgery, with rates ranging from 10 per 100 000 of the population in the United Kingdom to 28 per 100 000 in the United States [7]. In 2001-2 about 70 000 inguinal hernia repairs 62 969 primaries, 4939 recurrent were done in England, requiring more than 100 000 hospital bed days [8]. 95% of patients presenting to primary care are male, and in men the incidence rises from 11 per 10 000 person years aged 16-24 years to 200 per 10 000 person years aged 75 years or above [9]. In this study the most common age group affected was 41-50 years. This was very similar to the study by Balram et al, wherein the most effected age group was 42-50 years in Uttar Pradesh, India [10,11]. This was also similar to other studies like Sayanna et al and Basu et al. In some other studies bimodal peaking was also observed [12].

In this study it was observed that Out of total 71 Patients with inguinal hernia 30.96% were having heavy weight lifting as a major risk factor and 29.57% were having COPD or smoking as main risk factor [13], most of the heavy weight lifters were the factory workers, laborers, those workers who were working for construction companies and the people who were intending to be body builders [14]. There was a very strong correlation between heavy weight lifters and inguinal hernia in younger age groups [15]. In the same way there is a very strong positive correlation between COPD or smokers with inguinal hernia in older age groups [16].

Obesity was the third most common risk factor and then benign prostatic hyperplasia was present. There were 8.5% patients having more than one risk factors, constipation and other risk factors were least contributing. It was observed that all these risk factors were involved in increasing the intra-abdominal pressure [17]. The pathophysiology is based on the concept of increased abdominal pressure mechanical effect affecting a weak abdominal wall. It was also observed that there was only a very minute number of females effected by inguinal

hernia, males were mostly affected by this type of hernia.

### CONCLUSION:

This study shows weight lifting and smoking (COPD) having the strongest positive correlation with inguinal hernia, so there is a dire need of creating awareness among the public to stop smoking and to avoid heavy weight lifting for longer duration. Had the laws on rights of laborers and factory workers been implemented in Pakistan inguinal hernia would not have been so common among them. Obese people should be very careful about their diet as they have constant increased intra-abdominal pressure and that's why obesity is the third most common risk factor in this study. Studies of this type should be performed regularly and in every geographical region in order to identify the risk factors contributing to inguinal hernia to decrease the incidence of inguinal hernia; this will lessen the disease and will be a contributing factor towards happiness of human beings.

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