

# A STUDY ON THE PREVALENCE OF INGUINAL HERNIA AT KELUARGA SEHAT HOSPITAL PATI IN 2023

## ABSTRACT

**Background and Objective:** An inguinal hernia is the protrusion of the peritoneum, sometimes with abdominal organs, through the inguinal canal or abdominal muscles. Complications include incarcerated or strangulated hernia, a life-threatening emergency. Keluarga Sehat Hospital Pati, a Type C hospital, reports significant patient visits. The study aims to determine the prevalence of inguinal hernias at Keluarga Sehat Hospital Pati in 2023. **Methods:** This descriptive observational study analyzed inguinal hernia patients at Keluarga Sehat Hospital Pati in 2023, using medical records and SPSS for univariate analysis of categorical and numerical data. **Results:** Inguinal hernia patients were predominantly male (157 patients; 95.7%) with a mean age of 52.19 years with a standard deviation of 19.94 years, median value of 59 years with the youngest age of 0.9 years and the oldest age of 85 years. Evaluation of the age grouping found that most patients were dominated by the age range of 52-61 years (29.9%) and 62-71 years (29.3%). The most reported occupations were farmers (31 subjects; 18.9%) and self-employed (17 subjects; 10.4%). **Conclusion:** Inguinal hernia patients were dominated by the age range of 52-61 years and 62-71 years, where male patients dominated the majority of subjects.

**Keywords:** Inguinal hernia, Prevalence, Keluarga Sehat Hospital, Descriptive observational study, Patient demographics

## INTRODUCTION

An inguinal hernia is defined as the displacement of a portion of the peritoneum, possibly accompanied by abdominal viscera, that passes under the skin through the inguinal canal or directly through the abdominal muscles.[1] The diagnosis is generally made based on clinical characteristics and strangulation is a serious complication that must be considered[2]

Inguinal hernias mainly affect men aged between 20-60 years. Globally, there are more than 20 million cases of inguinal hernia per year. The United States (US) reports that 800,000 cases of inguinal hernia occur each year[3]. France reports that inguinal hernias account for 17.2% of all **surgeries**[4] that have been performed. Research specifically conducted at Prof. Dr. Margono Purwokerto Hospital found that between January 2021 and April 2022 most inguinal hernia patients were dominated by men (238 subjects; 83.5%). The analysis found that there was a tendency for inguinal hernia to occur as the patient's age **increased**[5]. Suryadinata's research,

PGMR et al, which assessed the characteristics of inguinal hernia inpatients at Buleleng Regency Hospital in 2021-2022, found that of the 65 inguinal hernia patients, most of the subjects were in the older age group, namely > 65 years (39%), male (92%), not working (25%), symptoms in the form of inguinal lumps (71%), lateral inguinal hernia (98%), incarcerated (37%), and received surgery with mesh (75%).<sup>[5]</sup> Zuar SS, et al's research related to inguinal hernia at Meuraxa Hospital, Banda Aceh City found that the highest prevalence of inguinal hernia at Meuraxa Banda Aceh Hospital in 2021 occurred in patients aged 41-65 years as many as 19 patients (55.8%), men (29 patients; 85.29%) and working as non-civil servants (28 patients; 82.35%)<sup>[4][5]</sup>

Inguinal hernias can present with a wide spectrum of symptoms. Most patients present with a lump or pain in the inguinal area. Some patients report pain or a lump that gets worse with physical activity or coughing. Other symptoms reported are a burning or pinching sensation in the inguinal area. This sensation may radiate to the scrotum or down the leg. Some cases of inguinal hernia may present as severe pain or obstructive symptoms caused by incarceration or strangulation of the hernia sac contents.<sup>[6]</sup> Physical examination is the primary way to diagnose a hernia. The examination is best performed with the patient standing. A visual examination of the inguinal area is performed first to evaluate for lumps or asymmetry in the inguinal or scrotum. The examiner palpates the inguinal area and scrotum to detect the presence of a hernia. Palpation of the inguinal canal is performed last.<sup>[7]</sup> The examiner palpates through the scrotum and towards the external inguinal ring. The patient is then instructed to cough or perform a Valsalva maneuver. If a hernia is present, the examiner will be able to palpate the lump moving in and out as the patient increases intra-abdominal pressure through coughing or Valsalva<sup>[8]</sup>

Reported complications of inguinal hernia include the risk of incarcerated or strangulated hernia. Strangulata is a life-threatening emergency. If not treated immediately, the hernia will tend to enlarge over time<sup>[9]</sup> When compared to elective surgical repair, patients with incarcerated inguinal hernias have higher morbidity and mortality rates of 19-30% and 1.4-13.4%, respectively.<sup>7</sup> Another study evaluating 13,028 patients in emergency departments between 2010-2019 found that the proportion of emergency department patients requiring hernia repair within 24 hours was 2.7%<sup>[10]</sup>

Rumah Sakit Keluarga Sehat Pati is one of the type C hospitals. Rumah Sakit Keluarga Sehat is committed to providing services to patients and publicizing the quality of its **services**.<sup>9</sup> A report related to the number of inpatients at Rumah Sakit Keluarga Sehat Pati in 2016-2021 found that the number of inpatients in 2021 reached 15,522 patients but the highest inpatient visits occurred in 2019, reaching 19,690 patients. Evaluation based on the type of specialty service in 2021 was found that the Surgery division had patients with a total number of treatment days of 3,292 **days**.<sup>10</sup> A special report conducted regarding the number of operations/surgeries in the central surgical installation (IBS) of Keluarga Sehat Hospital Pati from 2016-2021 found that in 2021 there were 5,545 surgical cases, but surgery in the IBS had the highest number in 2019,

namely 5,910 cases. This shows that Rumah Sakit Keluarga Sehat Pati is one of the referral centers for patient treatment around the Pati and Jepara areas.

Routine evaluation of patients is needed to determine the epidemiology of the disease so that it can be the basis for planning each department to determine the best steps to improve patient clinical outcomes. This study was conducted to determine the prevalence rate of inguinal hernia in Keluarga Sehat Hospital Pati in 2023. The results of the study are expected to be the basis for decision making in determining patient management steps, such as increasing the number of clinicals or educating high-risk groups, so as to improve patient clinical outcomes.

## METHOD

Descriptive observational study of inguinal hernia patients who underwent inpatient/outpatient care at **Keluarga Sehat Hospital Pati in 2023**[11]. The research subjects were obtained using the whole sampling method, namely all patients who met the inclusion criteria and did not have exclusion criteria would be used as research subjects, by evaluating patient medical record data. The inclusion criteria of the study were 1) patients diagnosed with inguinal hernia based on the evaluation of a surgeon, 2) having complete subject characteristic data in the medical record, including gender, age, employment status, and marital status. Exclusion criteria were patients with recurrent hernia. All data were evaluated for completeness before proceeding to data analysis. Data analysis was performed using the statistical application SPSS edition 29. Analysis was carried out using univariate tests, namely categorical data will be reported as frequency and percentage values while numerical data will be reported as mean, standard deviation, median value, minimum value and maximum value.

## RESULT

The evaluation conducted on all patients diagnosed with inguinal hernia at Keluarga Sehat Hospital Pati in 2023 obtained the following results

**Table1.**Demographics of research subjects

Variable	n (%)	Mean ± SD	Median (min-max)
Gender		-	-
1. Men	157 (95,7)		
2. Women	7 (4,3)		
Age		52.19 ± 19.94	59 (0.9-85)
1. 0-11	14 (8.5)		
2. 12-21	6 (3.7)		
3. 22-31	5 (3)		
4. 32-41	10 (6.1)		
5. 42-51	18 (11)		
6. 52-61	49 (29.9)		
7. 62-71	48 (29.3)		

Variable	n (%)	Mean ± SD	Median (min-max)
8. 72-81	13 (7.9)		
9. > 81	1 (0.6)		
1. Occupation		-	-
2. Student	2 (1.2)		
3. Merchant	3 (1.8)		
4. Civil servant	5 (3)		
5. Self-employed	17 (10.4)		
6. Private company employee	6 (3.7)		
7. Fisherman	2 (1.2)		
8. Farmer	31 (18.9)		
9. Retired	3 (1.8)		
10. Army	1 (0.6)		
11. Police Officer	1 (0.6)		
12. Casual Employee	1 (0.6)		
13. Laborer			
14. Housewife	6 (3.7)		
15. Other	1 (0.6)		
	85 (51.8)		
Marriage Status		-	-
1. Married	137 (83.5)		
2. Not Married	27 (16.5)		

Inguinal hernia patients were predominantly male (157 patients; 95.7%) compared to female (7 patients; 4.3%). The age of all patients had a mean of 52.19 years with a standard deviation of 19.94 years, a median value of 59 years with the youngest age of 0.9 years and the oldest age of 85 years. Evaluation of the age grouping found that most patients were dominated by the age range of 52-61 years (29.9%) and 62-71 years (29.3%).

The most reported occupation was others (85 subjects; 51.8%) followed by farmers (31 subjects; 18.9%) and self-employed (17 subjects; 10.4%). Evaluation of marital status found that most subjects were married (137 subjects; 83.5%).

## DISCUSSION

Inguinal hernia patients were dominated by the age range of 52-61 years and 62-71 years, where male patients dominated most of the subjects.

Agarwal PK, who assessed the demographics of inguinal hernia patients, found that based on the evaluation of 110 patients who underwent inguinal hernia surgery, the majority of patients were male (100 patients; 97.27%) with the most reported age being >50 years (43 patients; 39%). The male to female ratio of inguinal hernia incidence was 32[12] Iwan IA, et al who assessed the prevalence and characteristics of inguinal hernia patients obtained similar results that inguinal hernia patients were mostly suffered by men (95.6%), Spearman correlation test between age and

type of inguinal hernia obtained p value = 0.033 (<0.05). There is a relationship between the incidence of inguinal hernia with a history of chronic cough (68.9%) and doing heavy work (82.35%)[13].

Inguinal hernias are more common in men than women. Approximately 90% of inguinal hernia surgeries are performed in men, while 70% of femoral hernia surgeries are performed in women. The estimated lifetime risk of inguinal hernia in men is 27% and 3% in women. The high incidence of inguinal hernia in men is due to their involvement in more strenuous activities and weight lifting as well as anatomical differences between men and women. The most commonly reported risk factor for inguinal hernia is heavy lifting (~55%), followed by altered bowel habits (~36.36%) Smoking and diabetes are also associated as risk factors for inguinal hernia[13].

The prevalence of inguinal hernia is age-dependent, and in males, has a bimodal distribution curve, with a first peak at one year of age and a second peak after the fourth decade of life.<sup>14</sup>Inguinal hernias may present in the pediatric age group (congenital) or later in adults, which is usually considered an acquired condition. Persistence of the processus vaginalis (PPV) is involved in the etiopathogenesis of congenital hernias. The presence of PPV alone does not cause inguinal hernia. PPV and other risk factors such as family history, tissue weakness, and strenuous activity predispose to inguinal hernia. The etiology of inguinal hernia in adults is multifactorial and influenced by occupational, environmental and hereditary factors. Hypothetically, obesity is a high risk factor for inguinal hernia. The pathophysiology of hernias is based on the concept of increased intra-abdominal pressure (mechanical effect) affecting a weak abdominal wall[14]

Some types of hernias can return on their own or with manual assistance, while others cannot return either spontaneously or manually due to adhesion between the hernia contents and the hernia sac wall, so that the hernia contents cannot return to their original place. This can lead to difficulty walking or moving around, interfering with activities. If there is pressure on the hernia ring, the contents can become trapped and cause strangulated hernia, which is characterized by symptoms of ileus or intestinal obstruction. This condition disrupts blood circulation, reduces oxygen supply, and risks causing ischemia and necrosis of the hernia contents. If the hernia sac contains intestine, perforation can occur, potentially leading to a local abscess or **primary abscess** if there is a connection to the abdominal cavity. Intestinal obstruction can also reduce intestinal peristalsis, leading to constipation. In the case of strangulation, symptoms of ileus such as abdominal distension, vomiting and obstipation will be present. The pain will be sudden and persistent, and the area of the lump will appear redder and redder[13][15]

The most reported occupations related to inguinal hernia cases were **others**, farmers and self-employed. Most of the subjects were married. Kuijer PPFM, et al in a systematic review and meta-analysis study related to the relationship of work to the incidence of inguinal hernia found that there was a significant relationship between work with physical demands (OR 2.30, 95% CI

1.56-3.40) on the incidence of inguinal hernia. Two prospective studies, which included 382 and 22,926 cases, revealed an association for male workers that standing or walking >6 hours per workday (OR 1.45, 95% CI 1.12-1.88) or cumulative lifting >4000 kg per workday (OR 1.32, 95% CI 1.27-1.38) were associated with lateral inguinal hernia incidence.<sup>16</sup> Vad MV, et al who evaluated the relationship between exposure to mechanical work and lifestyle to inguinal hernia surgery in men found that the risk of inguinal hernia surgery increased with standing/walking time with an HR of 1.45 (95% CI 1.12 to 1.88) for  $\geq 6$  hours/day compared to <4 hours/day.[16]

The underlying mechanism of lateral hernia formation is that increased intra-abdominal pressure during standing/walking causes abdominal viscera to protrude through the inguinal canal. An upright position is also a prerequisite for the inguinal canal to open, whereas sitting may preclude hernia formation. The cumulative effect of gradual widening of a pre-existing opening over years of exposure to high risk factors will lead to a gradual increase in hernia formation.[17]

## CONCLUSION

Inguinal hernia patients were dominated by age > 52 years with male gender. The occupation most associated with inguinal hernia was farmer.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The authors hereby state that no generative AI tools such as large language models (ChatGPT, COPILOT, etc.) or text-to-image generators were utilized in the creation or editing of this work.

## DATA AVAILABILITY

All relevant data are included in the paper and its supporting information files. This study will assist researchers in identifying critical areas A Study On The Prevalence Of Inguinal Hernia At Keluarga Sehat Hospital Pati In 2023

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