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Characteristics of Inguinal Hernia Patients at Massenrempulu Hospital for the Period of 2023

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Abstract

Background: Hernia is a condition that can occur at all ages, characterized by a lump that appears and disappears. Inguinal hernia is the most common type, with lateral inguinal hernia accounting for 50%, medial 25%, and femoral 15%. About 15% of adults suffer from inguinal hernia, with prevalence increasing from 5–8% at ages 25–40 years to 45% at age 75. Hernia repair remains the most effective general surgical procedure. **Objective:** To determine the characteristics of inguinal hernia patients at Massenrempulu Hospital in 2023 based on age, occupation, classification, and body mass index (BMI). **Methods:** This study used a descriptive method with an observational design. Data were analyzed by frequency distribution according to research variables. **Results:** Inguinal hernia was more common in patients aged >66 years (45.9%), in heavy work occupations (70.3%), and classified predominantly as indirect/lateral inguinal hernia (94.6%). Based on BMI, most patients were in the overweight category (54.1%). **Conclusion:** At Massenrempulu Hospital in 2023, inguinal hernia was mostly found in patients aged >66 years, engaged in heavy work, with indirect/lateral classification, and overweight BMI.

Keywords: *Age, occupation, classification, body mass index (BMI), inguinal hernia patients.*

Introduction

The term hernia means protrusion of a peritoneal pouch, an organ, or preperitoneal fat through a congenital or acquired defect. Hernia consists of a ring, sac, and hernia contents [1]. Inguinal hernia is a condition of protrusion of intestinal organs entering a cavity through a defect or weak/thin part of the inguinal ring. About 75% of hernias occur in the inguinal region, with 50% being indirect inguinal hernias and 25% direct inguinal hernias [1].

Inguinal hernia is a multifactorial disease that can affect anyone regardless of age or gender. Nevertheless, inguinal hernia occurs more frequently in males and older adults, with one-third of males diagnosed with hernia. Besides gender and age factors, other factors increasing inguinal hernia risk include genetic factors and history of chronic obstructive pulmonary disease (COPD), Ehlers-Danlos syndrome, and Marfan syndrome [2].

According to the World Health Organization (WHO) 2016 data, hernia occurs in 350 cases per 1,000 population. Hernia is most commonly found in developing countries such as African and Southeast Asian nations including Indonesia[3]. Genetic factors can increase inguinal hernia likelihood fourfold compared to individuals without family history. Other factors include increased intra-abdominal pressure due to obesity, chronic coughing (COPD), heavy lifting activities

(such as laborers frequently lifting heavy objects, farmers often hoeing, and military personnel active in the field), and straining during constipation [2].

Global inguinal hernia incidence is 10 times higher than femoral hernia, together comprising about 75-80% of all hernia types, with incisional hernia at 10%, ventral hernia 10%, umbilical hernia 3%, and other hernias about 3%. Generally, inguinal hernia incidence is higher in males than females [4]. The incidence ratio of inguinal hernia is 13.9% in males and 2.1% in females. Inguinal hernia cases in the USA number approximately 800,000 annually and in the Netherlands about 33,000 annually [5].

An estimated 20 million inguinal hernia surgical procedures occur yearly worldwide, but global incidence and prevalence remain uncertain. Procedure rates vary across countries, ranging from 100 to 300 procedures per 100,000 people annually [6]. According to Indonesian Ministry of Health data, hernia ranks eighth among digestive system diseases with 18,145 cases, 273 of which resulted in death, possibly due to surgical failure [6,7].

South Sulawesi provincial health profile data shows increasing annual laparotomy surgery rates, reaching 143 to 163 cases[8]. Hernia or "downward bowel" condition can affect all ages (children, adults, elderly). It is characterized by lumps that appear and disappear. Lateral inguinal hernia is the most common type (about 50%), while medial inguinal hernia is 25% and femoral hernia about 15%. Among adults, 15% suffer from inguinal hernia, with 5-8% in the 25-40 age group and reaching 45% by age 75. Hernia repair is the most common and effective general surgical procedure [9–11].

Heavy work can increase intra-abdominal pressure, causing abdominal organs (usually intestines) to protrude through weak points or tears in thin muscle walls, leading to inguinal hernia. This is commonly associated with physically demanding jobs involving heavy lifting such as laborers frequently carrying heavy loads, farmers often hoeing, and military personnel active in the field. Conditions causing increased intra-abdominal pressure like chronic coughing, strong sneezing, and lifting heavy objects can reopen closed canals, causing lateral inguinal hernia as body tissue is pushed through defects, pressing against weakened walls due to trauma, prostatic hypertrophy, ascites, pregnancy, obesity, and congenital abnormalities [12].

Hernia complications include simple intestinal obstruction to intestinal perforation, potentially causing local abscesses, peritonitis, adhesions, irreducible hernia, strangulation causing ischemia, infection leading to necrosis, and constipation [13].

This research is important as it provides specific insights into inguinal hernia patient characteristics at Massenrempulu Hospital, a region that has received limited research attention. Additionally, it offers new contributions by analyzing relationships between demographic factors, occupation types, hernia classification, and body mass index with inguinal hernia incidence. Findings are expected to support development of more effective prevention and management strategies while enhancing understanding of inguinal hernia patterns in the region.

Materials and Methods

Study Design

This descriptive study used an observational design to objectively describe conditions without intervening on subjects. The study was conducted at Massenrempulu Regional Hospital, Enrekang Regency, South Sulawesi in August–September 2024. The objective was to evaluate inguinal hernia patient characteristics based on age, occupation, hernia classification, and Body Mass Index (BMI).

Sample

The research population included all inguinal hernia patients at Massenrempulu Regional Hospital during 2023. Inclusion criteria were patients diagnosed with inguinal hernia who underwent surgery, while exclusion criteria were patients with incomplete medical records. Total sampling was used, including all patients meeting inclusion and exclusion criteria.

Data Collection Techniques

Data were obtained from inguinal hernia patient medical records. Processing involved editing (checking completeness), coding (assigning codes per category), entering (inputting into computer programs), cleaning (ensuring consistency and error-free data), and tabulation (presenting data in tables).

Data Analysis Techniques

Analysis used SPSS (Statistical Package for the Social Sciences) with univariate methods to describe frequency distributions based on research variables (age, occupation, hernia classification, BMI).

Ethical Consideration

The study adhered to medical research ethics principles, including patient identity confidentiality, medical record use solely for scientific purposes, and imposing no additional risks. Research permission was obtained from Massenrempulu Regional Hospital management before data collection.

Result

Inguinal hernia is one of the most common hernia types in healthcare settings, occurring across various age groups. This study aimed to evaluate characteristics of inguinal hernia patients treated at Massenrempulu Regional Hospital. Analysis covered demographic aspects, occupation types, hernia classification, and Body Mass Index (BMI). Results are expected to provide epidemiological insights to support future prevention and management efforts. Below are the characteristics of inguinal hernia patients who participated in this study.

Table 1. Demographic and Clinical Characteristics of Inguinal Hernia Patients at Massenrempulu Hospital

Variable	Freq	Percentage (%)
Age Group		
0-5 Years	1	2.7
6-11 Years	1	2.7
12-16 Years	0	0
17-25 Years	1	2.7
26-35 Years	1	2.7
36-45 Years	3	8.1
46-55 Years	6	16.2
56-65 Years	7	18.9
>66 Years	17	45.9
Occupation		
Light Work	4	10.8
Moderate Work	7	18.9
Heavy Work	26	70.3
Hernia Classification		
Indirect Inguinal (Lateral)	35	94.6
Direct Inguinal (Medial)	2	5.4
BMI		
<18.5 (Underweight)	2	5.4
18.5-22.9 (Normal)	11	29.7
23-24.9 (Overweight)	20	54.1
25-29.9 (Obese I)	3	8.1
≥30 (Obese II)	1	2.7
Total	**37**	**100**

Table 1 shows the highest age group with inguinal hernia at Massenrempulu Hospital was >66 years (17 people, 45.9%), while the lowest were 0-5, 6-11, 17-25, and 26-35 years (1 person each, 2.7%). The highest occupation group was heavy work (26 people, 70.3%), while light work was lowest (4 people, 10.8%). The predominant hernia classification was indirect/lateral inguinal hernia (35 people, 94.6%), with direct/medial being lowest (2 people, 5.4%). The highest BMI category was overweight (23-24.9) with 20 people (54.1%), while ≥30 (obese II) was lowest (1 person, 2.7%).

Discussion

A study by Fuji Astuti M. et al. (2018) explained that most inguinal hernia patients were in the 41-65 age group (50 people, 43.8%) and 0-5 years (13 people, 11.4%), with the lowest in 11-20 years (6 people, 5.3%)[10]. Another study by Siambotan S.K. (2018) found

heavy occupation category had more inguinal hernia cases (43 people, 56.6%) compared to light work (16 people, 21.1%) [14].

According to Syafi. et al. (2023)[15], the highest age group was 41-65 years (55.88%), while other categories had few inguinal hernia cases. Research by Tety Tarwiani. et al. (2023)[16] found the highest inguinal hernia incidence in >60 years (44 patients, 62.9%).

Sari P. stated inguinal hernia can occur at all ages but is most common at 45-75 years, with increasing age directly correlating with incidence rates. This occurs because aging leads to anatomical and functional decline in body organs, such as reduced abdominal wall strength and weakened smooth muscle walls, causing the inguinal canal to open and allowing intestinal prolapse into the inguinal ring [17].

Research by Siambotan S.K. (2017) [14] explained inguinal hernia is one acute abdominal condition, with inguinal hernia cases constituting 6-10% of all hernias in adults. While occurring across all ages, inguinal hernia incidence is highest in older adults [14,18].

Hafani Z's study [19] with 80 respondents showed the highest occupation group was heavy work (67.5%). Research by Faridah U. et al. (2018) [20] explained heavy work like laborers frequently lifting heavy objects, farmers often hoeing, and military personnel active in the field increases inguinal hernia risk. Work duration also affects inguinal hernia occurrence, with moderate and heavy work over 1 year increasing risk fourfold. Heavy work increases intra-abdominal pressure, causing abdominal organs (usually intestines) to protrude through weak points or thin muscle walls, commonly associated with heavy lifting occupations [19,20].

Research by Erianto M. et al. (2021) explained that heavier workloads increase muscle movement, raising hernia risk. Research by Aditya R. et al. (2022) found the most common occupation among inguinal hernia patients was heavy work (33 patients, 47.22%), while light work had the fewest cases (13 patients, 16.67%) [12,18].

Heavy work in patients causes continuous increased intra-abdominal pressure, weakening abdominal muscles until they become slack. Prolonged heavy lifting weakens abdominal walls, potentially triggering inguinal hernia[14,18].

Research by Erianto M. et al. (2021) [18] found most cases were indirect/lateral inguinal hernia (98 people, 86.7%) compared to direct/medial (15 people, 13.3%). Previous research by Damar M (2015) showed the highest hernia type was indirect/lateral inguinal hernia (171 people, 96.61%) versus direct/medial (6 people, 3.39%) [18,21].

According to Alfarisi (2022)[22] with 98 respondents, the highest group was indirect/lateral inguinal hernia (89.8%) while the lowest was direct inguinal hernia (10.2%).

Research by Balamaddaiah G. et al. (2016) found higher indirect/lateral inguinal hernia incidence (379 people, 82.93%) compared to direct/medial (78 people, 17.67%)[23]. Research by Aditya R. et al. found indirect/lateral inguinal hernia was most common (33 people, 46.2%). Indirect/lateral inguinal hernia occurs when intestines exit the peritoneal cavity through the internal inguinal ring located lateral to the inferior epigastric vessels. The hernia enters the inguinal canal, and if long enough under pressure from heavy activities, it protrudes through the external inguinal ring, potentially reaching the scrotum if progressing[12].

Indirect/lateral inguinal hernia also occurs due to anatomical structure weaknesses in the lateral inguinal region, specifically the processus vaginalis not closing perfectly during congenital processes, making the area highly vulnerable to lateral inguinal hernia when anterior abdominal wall weakness occurs[23]. Research by Alfarisi et al. (2021) found the highest BMI group was overweight (23-24.9)

with 70 people (79.55%) and the lowest was normal (18.5-22.9) with 18 people (20.45%)[22].

Research by Chan Yong Park (2017)[24] found the highest BMI group was overweight (70 people, 63.1%) and the lowest was normal (41 people, 37%). Research by Gunawan et al. (2020) [25] found most inguinal hernia patients were overweight (54 people, 35.5%) and fewest were underweight (7 people, 4.6%)[25].

Contrasting with Rezky N's (2019)[26] research finding the highest BMI group was normal (15 people) and the lowest was obese II (10 people). Research by Parmono (2015)[27] found the highest group was normal BMI (53.1%), followed by overweight-obese (31.1%), and lowest underweight (15.5%).

Overweight individuals indeed face multiple disease risks, including inguinal hernia due to high intra-abdominal pressure. Abundant preperitoneal fat presses against the abdominal wall, creating loci minoris or muscle weaknesses and anulus relaxation. If fat infiltrates the omentum and mesentery, it reduces abdominal cavity volume, increasing intra-abdominal pressure that pushes internal organs into inguinal hernia [22].

Naturally, obese individuals experience increased intra-abdominal pressure. This increase, combined with weakened abdominal muscles, causes fat tissue and intra-abdominal organs (especially intestines) to be pushed, resulting in hernia.

Conclusion

Based on research results regarding inguinal hernia patient characteristics at Massenrempulu Regional Hospital during 2023, it can be concluded that: Age characteristics showed highest prevalence in >66 years group (45.9%); Occupation characteristics showed highest prevalence in heavy work group (70.3%); Classification characteristics showed highest prevalence in indirect/lateral inguinal hernia (94.6%); BMI characteristics showed highest prevalence in overweight group (54.1%).

Based on these findings, future research should further investigate risk factors contributing to high inguinal hernia prevalence in older adults, heavy workers, indirect hernia classification, and overweight BMI groups. Researchers could also explore specific preventive interventions, such as weight management education and ergonomic work practices for heavy workers. Additionally, more comprehensive study designs like analytic or longitudinal approaches are recommended to identify causal relationships between risk factors and inguinal hernia incidence.

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