ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE,

DEPARTMENT OF ANATOMY

Prevalence of Haemorrhoids and Associated Factors among Adult Patients at Surgical Consultation Clinic of Karamara and Jigjiga University Sheik Hassan Yabare Referral Hospitals of Jigjiga Town, Somali Region, Eastern Ethiopia.

By: Tahir Muhumed Hussein (BSc.)

A Thesis submitted to the Department of Anatomy, College of Health Sciences, Addis Ababa University, in partial fulfillment of the Requirement for the Degree of Master of Science (MSc.) in Medical Anatomy.

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ADDIS ABABA, ETHIOPIA

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LIST OF ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
AOPD	Adult Outpatient Department
AOR	Adjusted Odds Ratio
ARERC	Anatomy Research Ethical Review Committee
ASOP	Adult Surgical Outpatients
BMI	Body Mass Index
CHS	College of Health Science
CSA	Central Statistical Agency
EPI info	Epidemiological information software
ESRS	Ethiopia Somali Regional State
HM	Hemorrhoids
HIMS	Health Management Information System
HM	Hemorrhoid
IRB	Institutional Review Board
JJU	Jigjiga University
MRN	Medical Record Number
OPD	Outpatient Department
POPD	Pediatric Outpatient Department
SCC	Surgical Consultation Clinic
SPSS	Statistical Package for Social Sciences
SRHB	Somali Regional Health Bureau

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ABSTRACT

Background: *Hemorrhoids are swollen veins located around the anus or rectum. About 50 percent of adults experienced the symptoms of hemorrhoids by the age of 50. Hemorrhoids can be internal, external, or mixed. This study assesses the prevalence and associated factors of hemorrhoids among adult patients.*

Objective: *To assess the prevalence of hemorrhoids and associated risk factors among adult patients at the Surgical Consultation Clinic of Karamara and Jigjiga University Sheik Hassan Yabare Referral Hospitals of Jigjiga Town.*

Method and Material: *An institutional-based cross-sectional study was carried out from January 1 to April 30, 2023, at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Referral Hospitals of Jigjiga town in the Ethiopian Somali region, Eastern Ethiopia. The sample size (n=483) was determined by using a single population proportion formula and was selected by the systematic random sampling technique. After getting ethical clearance, the data were collected, and then the data were entered into EPI data version 3.1 and were exported to Statistical Package for Social Sciences (SPSS) version 20 for statistical analysis. Descriptive statistics were used to summarize categorical variables, and bivariate and multivariate analyses were performed by using COR and AOR with a 95% confidence interval.*

Result: *The result revealed that among 483 study participants, 67 had hemorrhoids; 52 of them were external, 14 were internal, and 1 was a mixed hemorrhoid (77.6%, 20.9, and 1.5%, respectively), with an overall prevalence of 13.87 [95% CI: (10.1-16.1)]. Sitting for a long time (AOR=7.57, [95%* (3.26-17.61)*]*, *constipation [(AOR=2.04, 95%* (1.13-3.69)*]*, eating spicy food [AOR=4.09 (1.36-12.4)], *and straining [AOR=6.05 (2.95-12.43)] have a significant association with hemorrhoids.*

Conclusion: *The prevalence of hemorrhoids was high when compared to most studies in Africa because of the presence of associated risk factors. According to the findings, it is advisable to visit a health facility to screen for hemorrhoids to intervene and avoid factors associated with hemorrhoids, such as standing for a long time and drinking lots of water to prevent constipation, eating fiber food to prevent constipation, and avoiding sitting too much.*

Keywords: *Prevalence, Hemorrhoids, Piles, Risk factors, Anal canal, Rectum. Jigjiga*

1. INTRODUCTION

1.1 Background

1.1.1 Historical Background of Hemorrhoids

There are early mentions of hemorrhoids in Egyptian literature, such as the Edwin Smith Papyrus (1700 BC) and the Ebers Papyrus (1500 BC) (Ebbel, 1937), which both discuss anal pathology. The Hippocratic (460 BC) and other Babylonian and Greek texts describe hemorrhoids clinically and surgically (Adams, 1849). Originating from the Greek words haema (blood) and rhoos (flowing), the term "hemorrhoids" was likely originally used to describe the flow of blood from the anus's veins by Hippocrates (460 BC). In his 1370 treatise, John of Arderne (born AD 1307) states that the "common people call them piles, the aristocracy calls them hemorrhoids, the French call them figs (figer, to clot)," but that it doesn't matter as long as you can cure them. The word "piles" is derived from the Latin pila (a ball).Celsus (25 BCAD 14) was a Roman. He explains the procedure and discusses the ligature and ligature excision techniques.

The Susruta Samhita (Bhishnagratna, 1907), an ancient Sanskrit literature on Hindu medicine, contains information about Indian medical history in the Far East. Clinical and surgical descriptions of hemorrhoids can be found in the Hippocratic (460 BC) and other Babylonian and Greek books (Adams, 1849). The word "hemorrhoids" comes from the Greek words haema (blood) and rhoos (flowing), and it was probably first used by Hippocrates (460 BC) to refer to the flow of blood from the anus's veins. John of Arderne (born AD 1307) claims in his dissertation from 1370 that although the "common people call them piles, the aristocracy calls them hemorrhoids, the French call them figs (figer, to clot) (1).

1.1.2 Pathophysiology of Hemorrhoids

The left lateral, right anterior, and right posterior regions of the anal canal house the three primary cushions. (3, 7, and 11 o'clock positions). The distal displacement and symptomatic expansion of the anal cushions are known as hemorrhoids. When anal cushions swell with blood, they help keep the anal cavity open while sneezing, coughing, and straining. When engorged with blood, anal cushions protect the underlying anal sphincters during defecation and play a key role in differentiating liquid, solid, and gas and the subsequent decision to evacuate. Little is known about

the precise pathophysiology of hemorrhoids. The rectum is the most common location for lower gastrointestinal varices in patients with portal hypertension, but this has not led to an increased incidence of hemorrhoids in the context of portal hypertension and varices, and pathological examination of hemorrhoids did not reveal the presence of arteriovenous shunts. The once widely held belief that hemorrhoids were brought on by anal canal varicosities is no longer valid, as hemorrhoids and anorectal varices are two different diseases (2).

The sliding anal canal theory is currently the most widely recognized. This theory, which is confirmed by the observation that, under a microscope, collagen fibers replace muscle tissues, suggests that hemorrhoids form as a result of the breakdown of the tissues that support the anal cushions. Along with the aforementioned results, histological investigations show a serious inflammatory process that damages the connective tissue and the arterial and venous blood vessel walls, resulting in ischemia and subsequent bleeding and mucosal ulcers. The pathophysiology of symptomatic hemorrhoids is rather debatable because Thomson and Corman suggest the following theories:

1. According to Thomson, the anchoring connective tissue deteriorates.
2. The hemorrhoidal tissue prolapses or shifts downward.
3. The arteriovenous anastomoses inside the cushions are abnormally distended.

Unusual enlargement of the internal hemorrhoidal venous plexus's veins. Lack of dietary fiber, prolonged straining, prolonged use of the commode, constipation, diarrhea, pregnancy, sedentary lifestyle, and family history are just a few of the several potential contributing factors that have been proposed as causes of hemorrhoidal cushion migration.

None of these etiologies, except pregnancy, have solid evidence behind them. The role of pelvic floor dysfunction has been discussed by others, especially about raised anal sphincter pressure, which has been shown in certain patients with hemorrhoids. Prolapse and ongoing slippage result from the weakening of the anatomical structures that support the muscular submucosae. These contributing factors include conditions such as anal fissures, solitary rectal ulcer syndrome, and various pelvic floor dysfunction-related problems. (3)

1.1.3 Etiology of Hemorrhoids

It's unclear what causes hemorrhoids. Since Burkitt's research in the 1970s, constipation, and a low-fiber diet have been implicated with hemorrhoids. Constipation is thought to cause persistent straining and hard stools, which degenerate the anal canal's supporting tissue and cause the anal

cushions to move distally. However, the epidemiologic characteristics of constipation and hemorrhoids are thought to cause persistent straining and hard stools, which degenerate the anal canal's supporting tissue and cause the anal cushions to move distally. Differences, including age, sex, ethnicity, and socioeconomic position, raising questions

About constipation's potential role as a risk factor. Hemorrhoids were linked to diarrhea rather than constipation, according to a study from the Milwaukee VA Medical Center. Colitis, malabsorption, intestinal bypass, and chronic pancreatitis were the concomitant disorders connected to hemorrhoids in a study using national VA data; constipation was not one of these conditions. Although elevated resting anal pressure is the most frequently observed physiological aberration, the evidence points to this as a secondary rather than causative issue. Reports of hemorrhoids in Ehlers-Danlos disease raise the possibility that collagen plays a part. In situations of hemorrhoids, abnormalities in the amount and quality of collagen may result in decreased mechanical stability, which may be etiologic. Patients with hemorrhoids have been reported to have higher levels of matrix metalloproteinases, which control extracellular proteins and tissue remodeling. (4)

1.1.4 Burden of Hemorrhoids:

In the United States, a single nationwide survey on hemorrhoids was carried out in 1989. In a National Health Interview Survey supplement on digestive diseases, respondents were asked if they had ever received a diagnosis of hemorrhoids from a physician. The US population was extrapolated using the survey data. In the previous year, an estimated 23 million persons, or 13% of the US population, received a hemorrhoid diagnosis. An estimated 36 million persons (20% of the US population) have had a hemorrhoid diagnosis at some point. Compared to men, women were more likely to report hemorrhoids (24% vs. 16%). In all, 7.7 million people, or 21%, said they had undergone surgery to treat their hemorrhoids. The number of US citizens with hemorrhoids in 2018 is not known. Data regarding hospital and doctor visits for hemorrhoids can be sources as a measure of burden. In 2004, there were 306,000 hospital discharges for hemorrhoids. Demand for hemorrhoid therapy has been predicted to increase by 23% over the next twenty years. Sources as a load indicator.

Hemorrhoids accounted for 306,000 hospital discharges in 2004. Over the next 20 years, there will likely be a 23% increase in demand for hemorrhoid therapy. With almost 4 million offices and ER visits per year, hemorrhoids were the third most common outpatient gastrointestinal diagnosis,

according to data from the 2010 National Hospital Ambulatory Medical Care Survey and the National Ambulatory Medical Care Survey.8. More people visited for hemorrhoids than for diverticular disease, irritable bowel syndrome, colon cancer, or inflammatory bowel disease.

Regretfully, no recent national data have been released. The Healthcare Cost and Utilization Project (HCUP) provides publicly available (but unpublished) statistics. Health statistics and data on hospital inpatient and ED utilization are accessible through HCUP. We determined 25,292 ambulatory surgical center visits for hemorrhoids in 2013 and 203,552 emergency department visits in 2014 at centers in 29 states (about two-thirds of the US population) using the HCUP online query system. These aren't national statistics. Every year, millions of over-the-counter medications are bought to treat hemorrhoids. For instance, Preparation H, one of several over-the-counter drugs, brought in $136 million in global sales in 2017.9. Regretfully, no statistics regarding the total expenses of hemorrhoid drugs are available in the (4,5).

1.1.5 Diagnosis of Hemorrhoids

Since patients frequently mistakenly believe that any anorectal complaint is caused by hemorrhoids when there may be another cause, the history and physical examination are crucial in the diagnosis process.

1.1.5.1 History for diagnosis:

Prolapse, soiling, itching, unpleasant grape-like tissue prolapses, and painless bright red bleeding are common symptoms of symptomatic internal hemorrhoids. Anemia is rarely the result of the bleeding, which usually manifests as blood streaks on the stool. Except for the possibility of pain, particularly when thrombosed, external hemorrhoids can manifest similarly to internal hemorrhoids. If there are no red flags (such as weight loss, abdominal pain, fever, or anemia), no family or personal history of colorectal cancer or inflammatory bowel disease, and the patient responds to medical treatment, endoscopic evaluation is not necessary for patients under 40 with suspected hemorrhoidal bleeding. Common signs of bothersome internal hemorrhoids include prolapse, soiling, itching, painful grape-like tissue prolapse, and painless bright red bleeding. Usually appearing as blood streaks on the stool, the bleeding rarely results in anemia. External hemorrhoids can present similarly to internal hemorrhoids, except for the potential for pain, especially when thrombosed. Endoscopic evaluation is not required for patients under 40 with suspected hemorrhoidal bleeding if there are no red flags (e.g., weight loss, abdominal pain, fever,

or anemia), no personal or family history of colorectal cancer or inflammatory bowel disease, and the patient responds to medical treatment (6).

1.1.5.2 Physical examination for diagnosis:

In addition to the abdomen, the perineal and rectal regions should be examined while the patient is at rest and while bearing down. Prone jackknife, lateral decubitus, or lithotomy (i.e., prone with the head and feet at a lower level with the table altered so that the hips are flexed) are possible positions for the patient. External hemorrhoids may be readily apparent, or internal hemorrhoids may prolapse. Unless they are large or prolapsed, internal hemorrhoids are less likely to be palpable; however, a digital rectal examination can detect lumps, pain, and fluctuance. Internal hemorrhoids that resemble purplish bulges can be observed during an anoscopy with the use of an anoscope. Physicians should avoid utilizing clock face terminology when describing lesions (7).

1.1.6 Management of Hemorrhoids

1.1.6.1 Conservative management:

Since hemorrhoids are so prevalent, preventive and minimally interventional therapy should be the initial lines of treatment, especially in the community. Without a doubt, lifestyle and diet are crucial in managing hemorrhoids. It has long been believed that fiber can both prevent and alleviate hemorrhoidal problems. A meta-analysis of seven clinical trials provided evidence of benefit, demonstrating that a fiber supplement reduced bleeding risk by about 50% and alleviated symptoms but had no effect on prolapse. Although it makes sense to increase oral fluid intake, exercise frequently, minimize straining, and avoid taking drugs that cause constipation, there is sadly little evidence to support this advice (8).

1.1.6.2 Drug therapy:

Preparatory creams and suppositories for hemorrhoids have given rise to a sizable market. The acute symptoms of hemorrhoidal illness may be momentarily alleviated by these combinations of steroids, anesthetics, antiseptics, and barrier creams. Patients frequently come back to these agents when their symptoms reappear, not understanding that they may have been alleviated by basic hygiene alone and that symptoms change over time. In contrast to these over-the-counter treatments, venotonic medicines have some indication of efficacy. Acute bleeding can be managed with oral flavonoid medicine. They have anti-inflammatory properties, lower capillary

permeability, lower venous capacity, improved lymphatic drainage, and raised vascular tone. Venotonics significantly reduce bleeding, pruritus, discharge, and overall symptoms, according to a major meta-analysis (9-10).

Table 1: Types of managing procedures

Sclerotherapy	**Office-based procedure**
Infrared coagulation	
Rubber band ligation (RBL)	

Doppler-guided hemorrhoidectomy	**Surgical procedure**
Stapled hemorrhoidopexy (SH)	
Conventional excisional Hemorrhoidectomy (CEH)	

1.2. Statement of the problem

With the differing frequency and risk factors across continents and nations, hemorrhoids—a common anorectal ailment marked by the enlargement of venous cushions in the anal canal—pose a worldwide health concern. Despite not being life-threatening, hemorrhoids have a major negative impact on people's quality of life because of symptoms like prolapse, discomfort, and bleeding. Because of cultural stigma and underreporting, the burden is frequently underestimated, especially in low- and middle-income nations. (11)

The Global Perspective

Asia: Hemorrhoids are becoming more common in Asia as a result of sedentary lifestyles, dietary changes, and urbanization. Significant cases are reported from nations like China and India, especially among middle-aged adults. Constipation, insufficient fiber intake, and spicy diets are prominent risk factors, and problems are sometimes made worse by postponed medical attention. Although they are still often employed, traditional treatments might occasionally fail to manage complex illnesses. Clinically, hemorrhoids can be asymptomatic or symptomatic, and their

symptoms—such as bleeding, prolapse, inflammation, and thrombosis—are becoming a major global health concern. Because it is linked to lifestyle factors, including interpersonal relationships, and is influenced by food, hygiene, and sexual behavior, hemorrhoid disease has a social burden in addition to an economic one that affects social security and health systems through indirect expenses. (12).

Europe: Hemorrhoids are one of the most common anorectal disorders diagnosed in Europe. In nations like Germany, France, and the UK, where sedentary lifestyles and aging populations are major factors, studies show a prevalence rate of 4–5%. Better diagnosis and treatment are made possible by Europe's advanced healthcare systems, yet early interventions are nevertheless delayed by cultural stigma. (13).

America: A sizable fraction of people in North and South America suffer from hemorrhoids. Nearly 10 million Americans suffer from hemorrhoidal symptoms each year, and two of the main risk factors are obesity and bad eating habits. Timely diagnosis and treatment are hampered in Latin America by socioeconomic inequality and restricted access to healthcare (14).

Australia: In Australia, between 15 and 20 percent of adults suffer from hemorrhoids. Their prevalence is influenced by a diet low in fiber and high levels of obesity. Although Australia's well-established healthcare system guarantees proper management, access to specialized care is frequently difficult for rural communities (15).

Africa and Selected Countries

Because of cultural taboos, low awareness, and a lack of proper healthcare infrastruture, hemorrhoids continue to be underdiagnosed and undertreated in Africa. Traditional defecation methods, low-fiber diets, and chronic constipation are contributing reasons.

Tanzania, Kenya, and Uganda: Due to dietary changes, urbanization, and a lack of access to healthcare, these East African nations are seeing an increase in the prevalence of hemorrhoids. Many individuals only seek treatment when their symptoms worsen or rely on conventional treatments.

Egypt: Because chronic constipation and straining are so widespread there, hemorrhoids are a typical complaint there. Rural communities have major healthcare issues, even though urban areas have better access to medical services.

Ethiopia: Hemorrhoids are a new public health concern in Ethiopia. Its prevalence is influenced by dietary changes, urbanization, and restricted access to specialized treatment. Due to their reliance on traditional methods and inadequate healthcare infrastructure, rural communities frequently experience delayed diagnosis and problems. (16, 17).

Conclusion statement of the problem

Both internationally and locally, hemorrhoids are a complex health concern. Designing successful interventions requires an understanding of regional differences in prevalence, risk factors, and healthcare availability. This calls for cooperation between enhanced healthcare systems, culturally informed methods, and public health awareness to promote prompt.

Diagnosis and treatment. Hemorrhoids are among the most common and frequently encountered diseases and are often not taken seriously by patients, who may be ashamed to seek medical treatment because of the intimate nature of the disease site, or the perception of hemorrhoids is also influenced by the traditional notion that the hemorrhoids are a minor problem; therefore, patients do not follow regular treatment, resulting in repeated occurrence. As such, the condition of many patients is severe by the time they seek treatment (18).

1.3 Significance of the Study

Since this information has never been thoroughly investigated or recorded, the goal of this study is to offer important insights into the prevalence and risk factors of hemorrhoids in the Ethiopian Somali Region. By addressing this important knowledge gap, the study helps to comprehend the region's present hemorrhoid burden and provides a basis for evidence-based health solutions.

The findings of this research can serve as a wake-up call for both regional and federal health authorities.

They stress the necessity of focused awareness campaigns as well as the development of efficient treatment and prevention plans that are adapted to the particular environmental, nutritional, and cultural circumstances of the Ethiopian Somali Region. These initiatives can improve general public health outcomes, lessen pain for those who are afflicted, and lower the occurrence of hemorrhoids.

Furthermore, this study has wider ramifications for the populace at large. It draws attention to the

risk factors for hemorrhoidal disease, including sedentary lifestyles, poor eating habits, and persistent constipation. By emphasizing these elements, the study can motivate people to take up healthier habits to reduce their risk of hemorrhoids. This information can encourage better health practices at the local level by enabling communities to take preventative action.

The study has substantial scholarly importance as well. In addition to the Ethiopian Somali Region, it offers a strong foundation for future research on hemorrhoid prevalence and risk factors in comparable environments throughout Ethiopia and other low-resource areas. Building on these results, researchers can investigate other facets of hemorrhoid disease, including its effects on the economy, the effectiveness of treatment, and the quality of life of patients.

In conclusion, this study fills a significant information vacuum in public health, influences policy, raises awareness among people, and adds to the corpus of scholarly work. It makes a long-lasting contribution to the battle against hemorrhoidal illness in Ethiopia and abroad by laying the groundwork for better healthcare delivery and future study.

2. LITERATURE REVIEW

2.1. Histology of Hemorrhoids.

Hemorrhoidal tissue, cushions of tissue within the anal canal that contain blood vessels and supporting tissue made up of muscle and elastic tissue, are present in all individuals. Based on the lithotomy position, there are usually three major hemorrhoidal cushions that originated in the right posterior, right anterior, and left lateral positions, known as the 3, 7, and 11 o'clock positions of the anal, respectively. The hemorrhoids are vascular structures within the anal canal that, when swollen or inflamed, become symptomatic. Histologically, they are composed of vascular, connective, and muscular tissues. Depending on their location and classification (external, internal, or mixed), their microscopic structure varies. Details on each type of hemorrhoid histology are

2.1.1. Histology of Internal Hemorrhoids

Internal hemorrhoids are located above the dentate line in the anal canal, within the submucosal layer. They are covered by columnar epithelium and are rich in vascular components.

Key Histological Features: Vascular Components: Consists of dilated veins, arteriovenous anastomoses, and sinusoids. The dilated venous plexus in internal hemorrhoids is surrounded by thin walls, making them prone to bleeding. Epithelial Lining: Lined with columnar epithelium, continuous with the rectal mucosa. The mucosa shows goblet cells responsible for mucus secretion, which may contribute to the discharge seen in internal hemorrhoids. Connective Tissue: Rich in loose connective tissue supporting the venous plexus. Contains minimal sensory nerves, which explains why internal hemorrhoids are generally painless. Muscle Layers: The muscularis mucosae layer may become stretched or disrupted during prolapse. The presence of smooth muscle fibers helps maintain the structural integrity of the hemorrhoidal cushions.

2.1.2. Histology of External Hemorrhoids

External hemorrhoids are located below the dentate line, and their histology reflects their location in the perianal skin. They are covered by stratified squamous epithelium, which is highly innervated, accounting for the pain associated with external hemorrhoids.

Key Histological Features: Epithelial Lining: Covered by keratinized stratified squamous epithelium. The epithelium is thick, protective, and similar to that of skin. Vascular Components: Consists of engorged veins within the subcutaneous tissue. The venous plexus is surrounded by denser fibrous tissue compared to internal hemorrhoids. Nerve Supply: Rich in somatic nerve endings, which makes external hemorrhoids very painful when thrombosed or irritated. Connective Tissue: Contains dense connective tissue interspersed with adipose tissue. Elastic and collagen fibers provide support to the subcutaneous layer.

2.1.3. Histology of Mixed Hemorrhoids

Mixed hemorrhoids combine features of both internal and external hemorrhoids. They are characterized by tissue involvement both above and below the dentate line. This type represents a transition zone in terms of histology.

Key Histological Features: Dual Epithelial Lining: The portion above the dentate line is covered by columnar epithelium. The portion below the dentate line transitions into stratified squamous epithelium, with gradual keratinization towards the periphery.

Vascular Structures: Extensive vascular networks, including both submucosal sinusoids and subcutaneous veins. Prone to engorgement and thrombosis due to the dual blood supply. Connective Tissue: A combination of loose and dense connective tissue surrounds the vascular structures. Mixed hemorrhoids are structurally weaker due to the transition zone, making them more prone to prolapse and strangulation. Muscular and Nerve Components: The muscularis mucosae of the internal portion merges with the external smooth muscle layers.

Sensory nerves dominate the external portion, contributing to pain, while the internal portion remains relatively insensitive.

Table 2 Types of haemorrhoids

Feature	Internal Hemorrhoids	External Hemorrhoids	Mixed Hemorrhoids
Location	Above dentate line	Below dentate line	Both above and below
Epithelium	Columnar	Stratified squamous	Both columnar and squamous
Nerve Supply	Minimal (visceral nerves)	Rich (somatic nerves)	Mixed
Vascular Features	Thin-walled venous sinusoids	Dense subcutaneous veins	Combination of both
Pain	Usually, painless	Painful if thrombosed	Painful in the external portion

2.2 Magnitude and Complication of Hemorrhoids

2.2.1 Magnitude

This subsection focuses on how common hemorrhoids are globally and in specific study regions.

Global Prevalence

Millions of individuals worldwide suffer from hemorrhoids, which are thought to afflict 4–5% of the general population. Studies conducted in developed nations have shown greater prevalence rates, which may be related to food and lifestyle factors. Although pregnancy raises the risk for women, both men and women are equally impacted.

Prevalence in Specific Regions

- Highlight findings from regions like Ethiopia or Sub-Saharan Africa that are similar to your research field. Explain any notable prevalence rates and the factors, such as lifestyle, diet, and healthcare access that influence them.

Local Context (my Study)

- Provide a brief overview of the data currently available regarding the 13.8% hemorrhoid prevalence in the Jigjiga town of the Somali Region, eastern Ethiopia. Since there is no data, highlight how important your research is to bridge this gap. In the US, hemorrhoid illness accounts for 3.3 million ambulatory care visits, making it the fourth most common outpatient gastrointestinal diagnosis. In the United States, 10 million hemorrhoids occur annually, or 4.4% of the total population. Peak incidence is reported by both sexes between the ages of 45 and 65. As many as one in four people have hemorrhoids, which cause a

substantial burden on the community and hospital practices. They are caused by pathological alterations in the anal cushions, including rupture of the supporting connective tissue, which explains the symptoms related to (20).

2.2.2 Complications of Hemorrhoids

The medical and societal repercussions of severe or untreated hemorrhoids are the main topic of this subsection.

Medical Complications

1. Bleeding: If hemorrhoids are left untreated, chronic bleeding might result in anemia.
2. Thrombosis: External hemorrhoids may form clots, which can cause excruciating discomfort and swelling.
3. Infection: Poor hygiene practices might lead to the infection of hemorrhoids.
4. Strangulation: Prolapsed hemorrhoids may become stuck and stop receiving blood, which results in necrosis, or tissue death.
5. Fecal Incontinence: Infrequent but possible following long-term or untreated hemorrhoidal disorders.

Social and Psychological Impact

1. Quality of Life:
    - Daily activities and productivity can be greatly impacted by chronic pain, bleeding, and itching.
    - Embarrassment: Because anal disorders are stigmatized, many patients put off getting treatment, which hurts their results.

Economic Burden

- Draw attention to the possible monetary expenses of treating hemorrhoids, such as hospital stays, operations, or missed wages from being unable to work.

2.3 Classification of hemorrhoids

2.3.1 Common classification of hemorrhoids

Hemorrhoids can be classified as external, mixed, and internal, according to their relation to the dentate line. External hemorrhoids originate below the dentate line and are managed conservatively unless the patient cannot keep the perianal region clean or they cause significant discomfort. They can also become acutely thrombosed, and surgery is advocated within 72 hr. of

the onset of symptoms. Internal hemorrhoids originate above the dentate line and can be managed according to the graded degree of prolapse, as described by Goligher. Generally, low-grade internal hemorrhoids are effectively treated conservatively, by non-operative measures, while high-grade internal hemorrhoids warrant procedural intervention. Surgery is also used when conservative and office-based measures fail. Decision-making in the management of hemorrhoids is complex and variable. It can be influenced by a myriad of factors, including the size and grade of hemorrhoids, patient characteristics, current guidelines, and postoperative complications, including pain and recurrence. Several societies have helped to condense these decisions into guidelines and practice parameters based on the level of evidence. Only one recent study has assessed the consensus of current practice with recent clinical practice guidelines, and this was a study in the Netherlands. However, no surveys have been done in Australia and New Zealand (22).

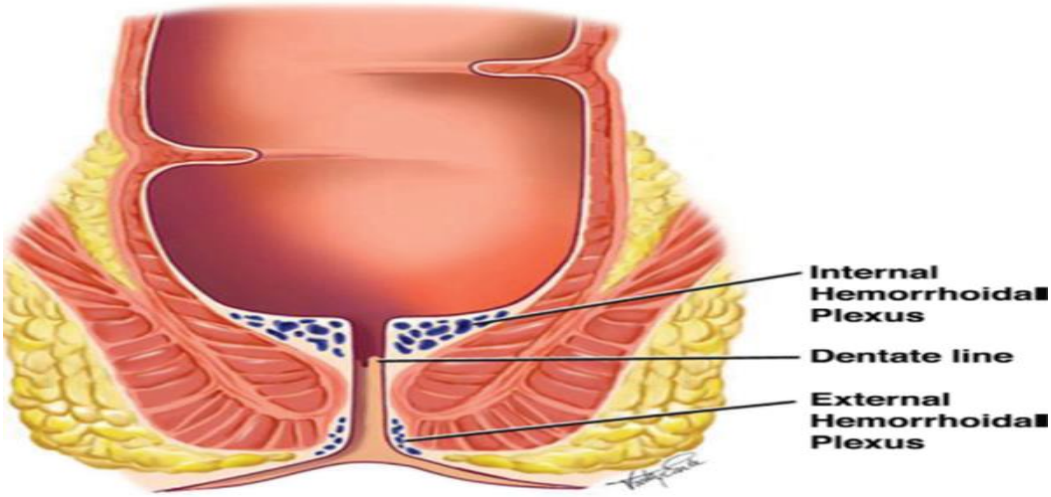

Figure-1. Types of hemorrhoid based on location

2.3.2 BPRST Classification of Hemorrhoid:

The TNM system, developed by Pierre Denoix in the late 1950s and widely used since the late 1960s for staging malignant neoplasms served as the model for the acronym BPRST, which was developed to identify and grade the most common complaints from people seeking medical attention because of hemorrhoids. Each letter in the BPRST classification stands for a distinct feature of the clinical history and physical examination; for example, B stands for bleeding, P for prolapse, R for reduction, S for skin tags, and T for thrombosis. The traits in this model can be ranked based on their quantity or intensity (seen on physical examination).

The patient can be divided into three clinical phases based on the total of these traits; these stages are necessarily graded.

Patients in stage I have bleeding, but no prolapse or external features (fibrotic skin tags or thrombosed piles) are apparent upon physical examination. Clinical interventions (like lifestyle changes) such as dietary fiber supplements, more water, exercise, or sitz baths are suggested for these individuals. Sclerotherapy, infrared photocoagulation, and rubber-band ligation are examples of outpatient procedures that are recommended on an individual basis. Regardless of the number of prolapsed piles, individuals in stage II have prolapse that can be decreased naturally or with the use of a digital technique. Although the adoption of the same techniques used for patients with stage I HD is conceivable for these patients (particularly for outpatient treatments, which also emphasize the prospect of adopting the high-macro rubber-band macro ligation procedure).

Patients in stage III may have acute hemorrhoidal thrombosis, fibrotic skin tags, or irreducible prolapse. (25)

2.3.3 Other Classification

Some authors proposed classifications based on hemorrhoid position, described as primary and secondary or circumferential, and some other authors' classifications are based on symptoms, described as prolapsed and non-prolapsed, but these classifications are less frequently used.

2.4 Symptoms of Hemorrhoids:

Bleeding is the commonest symptom of hemorrhoids, is alarming to the patient, and requires thorough exclusion of more serious pathology. The history of bleeding may give valuable clues to the source: hemorrhagic bleeding is usually at the time of defecation (often after the passage of stool) and is almost always bright red. The blood may drip into the toilet and may be associated with a constipated stool. Other symptoms include discomfort, pruritus, prolapse, swelling, pain, and discharge. Discomfort and pain are often caused by problems with the external hemorrhoidal component involving the sensitive overlying epithelium. Swelling of the external component, making hygiene more difficult after defecation, is probably also the main cause of pruritus (24).

The symptoms of hemorrhoids, according to their common types, are like this:

2.4.1. Symptoms of External Hemorrhoids

These are hemorrhoids that develop under the dentate line of the anus. Common symptoms include Pain: Often sharp or intense, especially during bowel movements.

Swelling: A lump or swelling near the anus. Itching and Irritation: Due to inflammation of the sensitive anal skin.

Bleeding: Small amounts of bright red blood are usually noticed on toilet paper.

Thrombosis: In severe cases, a blood clot forms, causing significant pain and a hard, bluish lump.

2.4.2. Symptoms of Internal Hemorrhoids.

These develop inside the rectum, above the dentate line, and are often less painful than external hemorrhoids. Symptoms include Painless Bleeding: Bright red blood may be noticed on toilet paper, in the toilet bowl, or covering the stool. Prolapse: In more advanced cases, the hemorrhoid may protrude outside the anus during bowel movements but often retract on its own.

Mucus Discharge: A clear or yellowish discharge may occur, which can lead to skin irritation.

Discomfort or Pressure: A feeling of incomplete evacuation or fullness in the rectum.

2.4.3. Symptoms of Mixed Hemorrhoids

These involve both internal and external hemorrhoids, so symptoms are a combination of the above. They may include pain and discomfort, both during and after bowel movements, due to the involvement of sensitive external tissue.

Protrusion with Pain: A prolapsed internal hemorrhoid may become trapped or thrombosed externally. Bleeding: More pronounced and persistent bleeding than in isolated types.

Swelling and Irritation: Both internal and external swelling may lead to increased discomfort.

2.5. Pathophysiology of hemorrhoids:

The exact pathophysiology of hemorrhoids is poorly understood. Currently, hemorrhoids are the pathologic term describing the symptomatic and abnormally downward displacement of normal anal cushions. As a result of destructive changes in the supporting connective tissue and abnormal blood circulation within anal cushions, the sliding anal cushions embrace abnormal dilation and distortion of the hemorrhoid plexus (25).

A recent study of morphology and hemodynamics of arterial supply to the anal canal revealed a hyperperfusion state of the hemorrhoidal plexus in patients with hemorrhoids, suggesting the dysregulation of vascular tone within hemorrhoid tissue. Moreover, it was evident that hemorrhoidal tissue contained some inflammatory cells and newly formed microvessels. For circumferential prolapsing hemorrhoids, it might be related to an internal rectal prolapse. In conclusion, although the true pathophysiology of hemorrhoid development is unknown, it is likely to be multifactorial, including sliding anal cushion, hyperperfusion of hemorrhoid plexus, vascular abnormality, tissue inflammation, and internal rectal prolapse (rectal redundancy). The different philosophies of hemorrhoid development may lead to different approaches to the treatment of hemorrhoids. (26).

2.6. Prevalence of Hemorrhoid Disease

Depending on the survey and study technique, the prevalence of hemorrhoids in Japan varies greatly; rates have been reported to range from 4% to 55% of the population. This broad range underscores the difficulties in acquiring accurate epidemiological data on hemorrhoids by highlighting variations in diagnostic criteria, study populations, and data collection techniques.

Interestingly, the prevalence of hemorrhoids does not appear to differ significantly between males and females, suggesting that gender is not a significant risk factor in this population. Age appears to be a major factor, though, as the sickness is most prevalent in those between the ages of 45 and 65. Several factors, such as changes in pelvic anatomy, job habits, and lifestyle choices, are likely responsible for this peak occurrence. (27).

Paris researchers used quota sampling to conduct an online adaptive poll in eight different countries. 16,015 individuals were recruited from nationally representative adult populations (aged ≥18 years) in Brazil, the Czech Republic, France, Hungary, Italy, Romania, Russia, and Spain. A total of 1,725 members in this cohort were found to have hemorrhoidal illness, yielding an overall prevalence rate of 11%. This study highlights the ubiquitous prevalence of hemorrhoidal illness and offers important insights into its global burden. The trustworthiness of the results was strengthened by the use of quota sampling, which guaranteed proportionate participation across different demographic groups. However, because participation frequently necessitates internet

connection and digital literacy, it is crucial to keep in mind that online survey approaches may introduce selection bias, potentially underrepresenting certain populations (28).

A two-year study at Burkina Faso's hepato-gastroenterology and gastrointestinal surgical facilities found that 140 instances of 2,294 consultations were related to hemorrhoidal illness. During the study period, this amounted to a 6.1% prevalence rate across all consultations.

Patients who presented with hemorrhoids ranged in age from 10 to 75 years, with mean ages of 58 and 39 years, respectively, illustrating the wide demographic dispersion of the ailment. Nonetheless, there was a significant preponderance in the 30- to 39-year-old age range, indicating that younger persons in this group might be more vulnerable because of dietary, lifestyle, or professional characteristics.

These results highlight the importance of hemorrhoidal illness as a prevalent but sometimes overlooked cause of morbidity in the Burkinabe community. Additionally, they draw attention to the (29). To determine the prevalence of hemorrhoidal illness, a one-year cross-sectional study was carried out at NIUM Hospital in India from January to December 2015. The prevalence rate was 50.6%, with 911 cases out of 1,800 examined patients being diagnosed with hemorrhoids. This high incidence highlights the substantial burden of hemorrhoidal disease in the Indian population, which may be related to risk factors such as sedentary lifestyles, dietary choices, and cultural customs that have an impact on intestinal health.

Studies from 1995 and 2007 found that the prevalence rates in Burkina Faso were 29.6% and 60%, respectively. The significant growth over time raises the possibility of an increase in risk factors such as urbanization, dietary changes, and restricted access to medical treatment. The variations in prevalence between (31).

Different African nations have varying rates of hemorrhoidal illness, which emphasizes geographical variations in risk factors and access to healthcare. The frequency in Gabon was 38.5%, which indicates that a sizable section of the populace suffers from the illness. A significantly greater prevalence of 58.8% was noted in Bangui, indicating the potential impact of regionally specific environmental, nutritional, or genetic variables. In Mali, on the other hand, the prevalence was comparatively lower at 30.4%, but it was still significant enough to raise public health concerns.

These discrepancies highlight the complex nature of hemorrhoidal disease, which is influenced by several factors, including lifestyle, nutrition, access to healthcare, and cultural perceptions of

gastrointestinal health. The necessity for improved public health measures is highlighted by the high prevalence rates in various areas, including (32).

Between 2008 and 2009, prospective research was carried out in Austria to screen for hemorrhoidal illness through a national healthcare program. With 976 participants from four major medical institutes, the study offered a thorough evaluation of the population's condition. Hemorrhoids were diagnosed in 380 of the examined patients, yielding a 38.93% prevalence rate.

This high prevalence rate emphasizes the usefulness of regular screening programs and the significance of hemorrhoidal illness in Austria for public health. The results imply that hemorrhoids are a prevalent ailment in the general community, calling for greater knowledge and easier access to treatment and preventive measures.

Additionally, the study demonstrates the benefits of employing a prospective approach, which enables precise data collection and analysis (33).

Between February and May 2021, the University of Gondar in Ethiopia carried out a study on the prevalence of hemorrhoidal illness. An institution-based cross-sectional study design was used in the study to determine the prevalence of hemorrhoids among university students. Of the 403 patients in the study, 53 had a hemorrhoid diagnosis, yielding a 13.1% overall prevalence rate.

The epidemiology of hemorrhoidal disease in Ethiopia, a location with little information on the problem, is better understood according to this study. Hemorrhoids are a common health problem in this community, as seen by the 13.1% prevalence. Additionally, a snapshot of the illness burden was made possible by the study's cross-sectional methodology, which helped identify relevant risk factors and demography (34).

Summary of Hemorrhoid Prevalence: Global to Local Perspective.

Globally, the prevalence of hemorrhoids varies widely, with rates ranging from 4% to 55%, depending on study methodologies, populations, and geographic regions. For example, a multinational survey across eight countries, including Brazil, France, and Russia, reported a prevalence of 11%, while Austria's nationwide screening program identified a prevalence of 38.93%. Similarly, studies in African nations like Gabon, Bangui, and Mali revealed rates of 38.5%, 58.8%, and 30.4%, respectively. These figures highlight the global burden of hemorrhoidal disease and its variability across regions.

In Ethiopia, recent studies have provided valuable insights into the local prevalence of hemorrhoids. At the University of Gondar, a cross-sectional study conducted from February to

May 2021 reported a prevalence rate of 13.1% among 403 participants. Similarly, research conducted at hospitals in Jigjiga revealed a slightly higher prevalence of 13.87%, emphasizing the public health importance of this condition in the Ethiopian context.

These findings indicate that hemorrhoids are a significant health concern at both global and local levels. While Ethiopia's prevalence rates are within the lower range compared to global figures, they still underscore the need for targeted awareness, prevention, and management strategies to reduce the burden of hemorrhoidal disease within the country.

2.7. Associated Factors of Hemorrhoids

A study conducted at the University of Gondar in Ethiopia identified two key factors associated with hemorrhoids: constipation and body mass index (BMI). These findings align with broader literature highlighting the multifactorial nature of hemorrhoidal disease and its strong links to lifestyle and physiological factors.

1. Constipation is one of the well-documented risk factors for hemorrhoids. It contributes to increase straining during defecation, which raises intra-abdominal and venous pressure, leading to the development or exacerbation of hemorrhoidal veins. In the Gondar study, participants who reported frequent episodes of constipation were significantly more likely to develop hemorrhoids. This association underscores the importance of promoting dietary habits rich in fiber, hydration, and physical activity to reduce the incidence of constipation and, consequently, hemorrhoids.
2. Body Mass Index (BMI): The study also revealed a significant association between BMI and hemorrhoids, with individuals classified as overweight or obese at higher risk. Increased body weight places additional pressure on the pelvic region, impairing venous return and predisposing individuals to hemorrhoidal disease. These findings suggest that addressing obesity through weight management programs and promoting active lifestyles could serve as effective preventive measures against hemorrhoids.

Broader Implications: While the Gondar study focuses on constipation and BMI, these factors are part of a larger constellation of potential risks that include prolonged sitting, low dietary fiber intake, pregnancy, and age. The findings underscore the necessity of addressing modifiable risk factors through targeted interventions, particularly in low-resource settings where hemorrhoidal disease may remain underdiagnosed and untreated (34).

A comprehensive study conducted in the United States identified several key risk factors associated with the development of hemorrhoids. These factors are primarily linked to conditions that increase intra-abdominal pressure, which plays a crucial role in the pathogenesis of hemorrhoidal disease. The major risk factors identified include:

1. Straining During Defecation

Straining is a common contributor to the development of hemorrhoids, as it leads to increased pressure in the veins of the rectum and anus. This repetitive pressure, especially during bowel movements, weakens the venous walls and promotes the formation of hemorrhoidal tissues. Straining is often a result of chronic constipation, poor bowel habits, or inadequate dietary fiber.

2. Inadequate Fiber Intake

A diet lacking in fiber is a significant risk factor for hemorrhoids. Low fiber intake contributes to constipation, which in turn leads to straining during defecation. A lack of fiber makes stool harder to pass, resulting in prolonged periods of pressure on the anal veins. Increasing dietary fiber intake through fruits, vegetables, and whole grains is widely recommended as a preventive measure.

3. Prolonged Sitting or Standing

Prolonged sitting, particularly on the toilet, and standing for extended periods can exacerbate hemorrhoids by increasing pressure in the pelvic region. Occupational factors, such as desk jobs that require long hours of sitting or jobs that require prolonged standing, can contribute to the development of hemorrhoidal disease. Regular movement and changes in posture can help alleviate this pressure.

4. Constipation and Diarrhea

Both constipation and diarrhea are associated with an increased risk of hemorrhoids. Constipation leads to straining during bowel movements, while diarrhea can cause irritation and inflammation of the anal tissues. Recurrent episodes of either condition can contribute to hemorrhoidal development over time. Managing both conditions through dietary changes and medication can help reduce the risk.

5. Pregnancy

Pregnancy is a well-known risk factor for hemorrhoidal disease, as the growing uterus places additional pressure on the veins in the pelvic region. The hormonal changes during pregnancy also contribute to the relaxation of the venous walls, making them more susceptible to swelling and hemorrhoidal formation.

6. Ascites and Pelvic Space-Occupying Lesions

Conditions such as ascites (fluid buildup in the abdomen) and pelvic space-occupying lesions (tumors or growths in the pelvic cavity) can also increase intra-abdominal pressure, contributing to the development of hemorrhoids. These conditions may impair normal venous return from the lower body, leading to the engorgement of anal veins.

This study highlights the multifactorial nature of hemorrhoidal disease, where lifestyle, diet, and underlying medical conditions all contribute to its development. Preventive strategies that focus on improving dietary habits, encouraging physical activity, and managing risk factors such as constipation and pregnancy are essential in reducing the prevalence of hemorrhoids. Understanding the diverse risk factors is crucial for developing effective public health interventions and individualized treatment plans (35).

Data from France, which related to hemorrhoid risk factors, indicated that heredity, high socioeconomic level, obesity, smoking, a diet rich in fats, alcohol, spices, and pepper, and low fluid intake have been implicated. In women, obstetric events (pregnancy) have been reported to be risk factors (36).

A study conducted in Korea identified several key risk factors associated with the development of hemorrhoidal disease, focusing on lifestyle and dietary factors that contribute to increased intra-abdominal pressure and gastrointestinal health. The major risk factors identified include:

1. Abdominal Obesity

Abdominal obesity, characterized by excess fat accumulation around the waist and abdomen, was found to be a significant risk factor for hemorrhoids. This condition increases intra-abdominal pressure, which can strain the veins in the rectal and anal regions, promoting the development of hemorrhoidal disease. Abdominal obesity is often linked to poor dietary habits and a sedentary lifestyle, both of which can exacerbate the risk of hemorrhoids.

2. High Body Mass Index (BMI)

The study also highlighted high BMI as a prominent risk factor for hemorrhoids. Individuals with a high BMI tend to have increased body weight, which places extra pressure on the pelvic veins and the anal region. This added weight can impair venous return, leading to the engorgement of hemorrhoidal veins. Overweight and obese individuals are thus more likely to experience hemorrhoidal symptoms, making weight management a crucial preventive measure.

3. Low Fiber Food Intake

A diet low in fiber is another critical factor contributing to hemorrhoidal disease. Low fiber intake can lead to constipation, which causes straining during defecation, a major risk factor for hemorrhoids. Additionally, low fiber intake makes bowel movements less frequent and harder to pass, further increasing the risk of hemorrhoidal formation. Encouraging a high-fiber diet, rich in fruits, vegetables, and whole grains, is essential for preventing hemorrhoids.

4. Large Meals at Once

The study also found that consuming large quantities of food at once can increase the risk of hemorrhoids. Overeating leads to digestive discomfort, increased pressure on the abdominal region, and a higher likelihood of constipation. This risk factor suggests that meal portion control and more frequent, balanced meals could help reduce the strain on the gastrointestinal system and prevent hemorrhoidal disease.

Conclusion and Implications. The findings from this Korean study underscore the significant role of lifestyle and dietary factors in the development of hemorrhoidal disease. Abdominal obesity, high BMI, low fiber intake, and large meal portions all contribute to increased intra-abdominal pressure and digestive strain, which can lead to hemorrhoids. These insights highlight the importance of adopting a healthier lifestyle, including regular physical activity, weight management, and improved dietary habits, to reduce the risk of developing hemorrhoidal disease (37).

Summary of Associated Factors of Hemorrhoids: Global to Local (Ethiopia)

Global Perspective

Globally, several risk factors have been identified as contributing to the development of hemorrhoids. These include lifestyle, dietary habits, and physiological conditions that lead to increased intra-abdominal pressure. Key global risk factors include:

Straining during bowel movements: Often due to constipation, this is one of the most significant contributors to hemorrhoidal disease.

Inadequate fiber intake: A diet low in fiber can lead to constipation and harder stools, increasing the risk of straining.

Prolonged sitting or standing: Occupations or lifestyles that require long periods of sitting or standing can exacerbate hemorrhoidal symptoms.

High BMI and obesity: Increased body weight and abdominal obesity contribute to higher pressure on the pelvic veins.

Pregnancy: Hormonal changes and physical pressure on the pelvic veins increase the risk of hemorrhoidal disease.

Other conditions: Diarrhea, ascites, and pelvic space-occupying lesions also increase intra-abdominal pressure and contribute to hemorrhoids.

These factors have been studied in various regions, from the United States to South Korea, revealing consistent links between lifestyle habits, diet, and the development of hemorrhoidal disease.

Local Perspective: Ethiopia

In Ethiopia, recent studies have highlighted constipation and body mass index (BMI) as the primary risk factors for hemorrhoids.

Constipation: In a study conducted at the University of Gondar, it was found that individuals with chronic constipation were at a higher risk of developing hemorrhoids due to the increased straining required during defecation.

BMI: Both the University of Gondar and other local studies have pointed to overweight and obesity as risk factors, where increased body weight leads to added pressure on the pelvic veins, making hemorrhoidal formation more likely.

Other potential local risk factors may include poor dietary habits (low fiber intake) and lack of physical activity, which are common challenges in many Ethiopian communities. The findings suggest that public health interventions focusing on dietary improvements, weight management, and increased physical activity could significantly reduce the prevalence of hemorrhoidal disease in Ethiopia.

Conclusion. From a global perspective, the risk factors for hemorrhoids are broadly similar across various populations, with lifestyle factors like constipation, diet, and body weight playing crucial roles. Locally, in Ethiopia, studies confirm that constipation and high BMI are the most significant contributors to hemorrhoidal disease. Addressing these factors through targeted public health strategies could lead to a reduction in the prevalence of hemorrhoids and improve the quality of life for affected individuals.

3. OBJECTIVES

3.1. General Objective

- To assess the prevalence of hemorrhoids and associated factors in adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga Town in Ethiopia, Somali Region, Eastern Ethiopia.

3.2. Specific Objectives

- To assess the prevalence of hemorrhoid diseases in adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga town
- To identify factors associated with hemorrhoid diseases in adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga town
- To describe the pattern of hemorrhoid disease in adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga town.

4. METHODS AND MATERIALS

4.1. Study area

The Jigjiga town is the capital city of the Ethiopian Somali Regional State, with an altitude of 1,609 meters above sea level and 620 km to the east from Addis Ababa. The Jigjiga town has 2 hospitals providing services for more than 377,560 residents in the Jigjiga Zone and also 6 health centers. The Karamara Hospital is the oldest one among the hospitals in the Somali region. It was established in 1941 G.C., and it is under the Ethiopian Somali Regional Health Bureau. The Jigjiga University Sheikh Hassan Yabare referral hospital is under Jigjiga University, and the name of Sheikh Hassan Yabare referral hospital is the current name, but the previous name was Jigjiga University Meles Zenawi Memorial Referral Hospital (JJU-MZMRH); it was inaugurated in January 2017 G.C.

This study was conducted in two hospitals that are located in Jigjiga town.

4.2. Study period

The data collection was conducted from January 1 to April 30, 2023.

4.3. Study design

An institution-based cross-sectional study design was applied.

4.4. Source Population

The source population of the study was all patients who visited the Karamara and Jigjiga University Sheik Hassan Yabare referral hospitals from January 1 to April 30, 2023.

4.5. Study Population

The adult patients who visited the surgical consultation of Karamara and Jigjiga University Sheik Hassan Yabare referral hospitals within the study period fulfilled the inclusion criteria.

4.6. Eligibility criteria

4.6.1 Inclusion criteria

All adult cases that came to the surgical consultation clinic within the study period from January 1 to April 30, 2023, were included.

4.6.2 Exclusion criteria

All cases whose age was less than 19 years, unconscious patients, and unacceptable patients who came to the surgical consultation clinic were excluded.

4.7 Sample size determination

The study, which was done at Gonder University of Ethiopia for the prevalence of hemorrhoid disease, was a baseline for my sample, which was 13% [34]. The minimum number of samples required for this study was determined by using a single population proportional formula.

Where: n = minimum sample size required for the study

Z = standard normal distribution (Z = 1.96), CI of 95%, α of 5%

P = prevalence of hemorrhoids; 13% (0.13) is used.

D = Absolute precision, or tolerable margin of error, is 3% (0.03).

$n = \frac{(1.96)^2 (0.13)(0.87)}{} = \frac{3.8416 (0.1131) = 0.43448496 = 483}{}$

(0.03)20.03*0.030.0009

The final sample size was 483.

4.8. Sampling procedure and selection of study subjects

All cases registered at the surgical consultation clinic of the two hospitals within the study frame from January 1 to April 30, 2023, were considered, and then it was selected for all patients for both non-hemorrhoid and hemorrhoid disease, and those who met the inclusion criteria were considered by using systematic random sampling because they were more than a sample size of 483.

4.9. Study variables

4.9.1. Dependent variable

Hemorrhoid disease was the dependent variable.

4.9.2. Independent Variables

Overweight, pregnancy, strain, constipation, age, low-fiber food, standing or sitting for a long time, sex, marital status, occupation, educational status, regular heavy lifting, average monthly income, and ethnicity were the independent variables.

4.10. Data collection tool and procedures

Data were collected using a well-structured checklist. First, we selected all cases that visited the Adult Surgical Outpatient (ASOP) that fulfilled the inclusion criteria within the study period. The four diploma nurses collected the data using the systematic random sampling method and put it into a questionnaire, and one BSc nurse, the coordinator, checked the completeness of the process of data collection. Supervision was undertaken by one supervisor. Finally, the data were given to the principal investigator to keep the data in the main data collection format (EPI data version 3.1). Lastly, the data were transferred into the Statistical Package for Social Sciences (SPSS) version 20.

4. 11. Data quality control

To maintain data quality, the orientation about how to collect the data was given to data collectors and supervisors for one day. Properly designed data collection tools, which were checked by professional experts, were developed. Supervision was carried out daily to check completeness and consistency by both the supervisor and the principal investigator to ensure the quality of data.

4. 12. Data analysis and interpretation

The data were checked after each data collection for completeness. Then the data were entered into EPI data version 3.1 and were analyzed by using Statistical Package for Social Sciences (SPSS) version 20. Bivariate and multivariate logistic regression analyses were carried out to distinguish the independent effect of each variable. Categorical data were presented in the form of frequency tables, graphs, bar charts, and percentages.

4. 13. Ethical considerations

The ethical clearance was obtained from the Department of Anatomy Research Ethical Review Committee (DRERC), Addis Ababa University. Since the two hospitals are under two different institutions, this ethical clearance and cooperation letter from DRERC was sent to the Ethiopia Somali Regional Health Bureau and Jigjiga University to obtain permission to perform data collection in the mentioned hospitals. All the data were handled confidentially, and names were not mentioned.

4.14. Operational definitions

Adult: Adulthood is commonly thought of as beginning at the age of 19 years.

Hemorrhoids are normal anatomic and functional components of the anal canal.

Hemorrhoid disease: enlargement and distal displacements of the normal anal cushion

Internal hemorrhoids: They are located above the dentate line and covered by simple columnar epithelium.

External hemorrhoids: They are located below the dentate line and covered with stratified squamous epithelium.

Primary hemorrhoid disease: when inflammation of the hemorrhoid occurs, the anal cushions

Secondary hemorrhoid disease: when inflammation of hemorrhoids occurs between the anal cushions

5: RESULT

5.1 Socio-demographic characteristics

This study included a total of 483 patients, with a response rate of 98%. The mean age of the participants was 43.22, and the majority of the participants were urban dwellers, 435 (90.1%), and also married, 416 (86.1%), respectively (Table 3):

Table 3. Socio-demographic characteristics of study participants who visited the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga town

Variable	Category	Frequency(n=483)	Percent
Sex	Male	232	48.0
	Female	251	52.0
Age	19-29	38	7.9
	30-39	70	14.5
	40-49	283	58.6
	>50	92	10.05
Residence	Urban	435	90.1
	Rural	48	9.9
Religion	Muslim	374	77.4
	Orthodox	36	7.5
	Protestant	73	15.1
Marital status	Single	36	7.5
	Married	416	86.1
	Divorced	19	3.9
	Widowed	12	2.5
Occupation	Shop Keeper	43	8.9
	Student	19	3.9
	Driver	114	23.6
	Housewife	125	25.9
	Teacher	46	9.5
	Farmer	21	4.3
	Office worker	26	5.4
	Others	89	18.4
Educational status	No formal education	62	12.8
	Primary	54	11.2

	Intermediate	37	7.7
	Secondary	175	36.2
	College and above	155	32.1
Ethnicity	Somali	400	82.81
	Gurage	40	8.29
	Oromo	30	6.21
	Others	13	2.70
Average monthly income	<1500	26	5.4
	1501-8099	302	62.5
	>9000	155	32.1

5.2. Characteristics of associated factors for hemorrhoids

Characteristics of the study participants associated with risk factors for hemorrhoids are presented in the table below (Table 4).

Table 4: Characteristics of the study participants and associated risk factors for hemorrhoids

Variable	**Category**	**Frequency**	**Percent**
Family history of hemorrhoids	Yes	47	9.7
	No	436	90.3
Alcohol	Yes	17	3.5
	No	466	96.5
Physical exercise	Yes	52	10.8
	No	431	89.2
Smoking	Yes	37	7.7
	No	446	92.3
Standing for a long time	Yes	144	29.8
	No	339	70.2
Eating low fiber diet	Yes	151	31.3
	No	332	68.7
Constipation	Yes	211	43.7
	No	271	56.1
Diarrhea	Yes	31	6.4
	No	450	93.2
BMI	<16	3	.6
	16-16.99	17	3.5
	17-18.45	53	11.0
	18.5-24.9	216	44.7
	25-29.9	71	14.7
	30-34.9	85	17.6
	35-39.9	34	7.0
	>40	4	.8

Chewing chat	Yes	117	24.2
	No	366	75.8
Blood pressure	<90/60	4	.8
	90/60-140/90	471	97.5
	>140/90	8	1.7
Straining	Yes	153	31.7
	No	330	68.3
Sitting for a long time	Yes	174	36.0
	No	309	64.0
Using fatty food	Yes	202	41.8
	No	281	58.2
Parity	Nulli para	11	2.3
	Primi para	43	8.9
	Multi para	111	23.0
	Grand-multi para	91	18.8
Regular heavy-weight lifting	Yes	26	5.4
	No	457	94.6
Chronic cough	Yes	4	.8
	No	479	99.2
Peppers and spicy food	Yes	238	49.3
	No	245	50.7

5.3. Types of study variable (dependent and independent)

Out of 483 study participants, 416 (86.1%) had no hemorrhoids, and 67 (13.9%) had hemorrhoids. Figure 2:

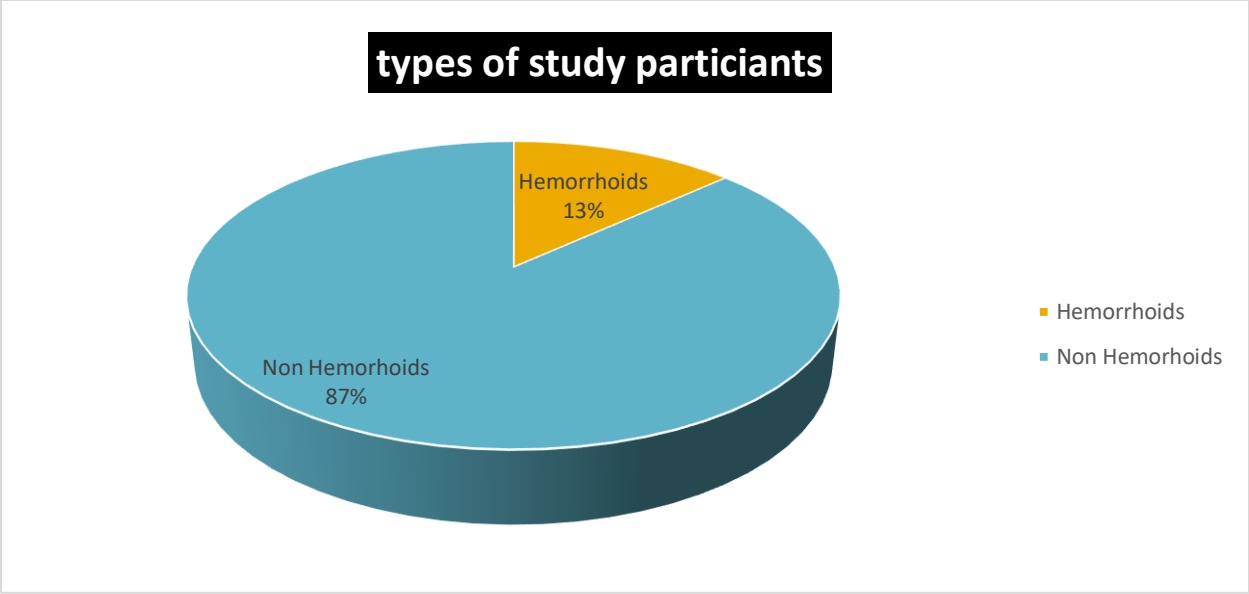

Figure 2: Type of study participants

5.4. Hemorrhoid pattern (types of hemorrhoids)

5.4.1. External and internal hemorrhoids

Among 67 hemorrhoid cases, 42 of them are males and 25 are females, and based on the type of hemorrhoid, 52 (77.6%) are with external hemorrhoids, 14 (20.9%) are with internal hemorrhoids, and 1 (1.5%) has mixed hemorrhoids, as shown in Table 5 (27).

Table 5: Types of Hemorrhoids among the Cases

	types	Sex		Total	Frequency
		Male	Female		
Type of haemorrhoids	External	35	17	52	77.6
	mixed	1		1	1.5
	Internal	6	8	14	20.9
Total		42	25	67	

5.4.2. Types of internal hemorrhoids

In this study among 67 hemorrhoid cases, 15 of them were internal hemorrhoids, and they were grouped into three as grade I, grade II, and grade III shown in Figure 2.

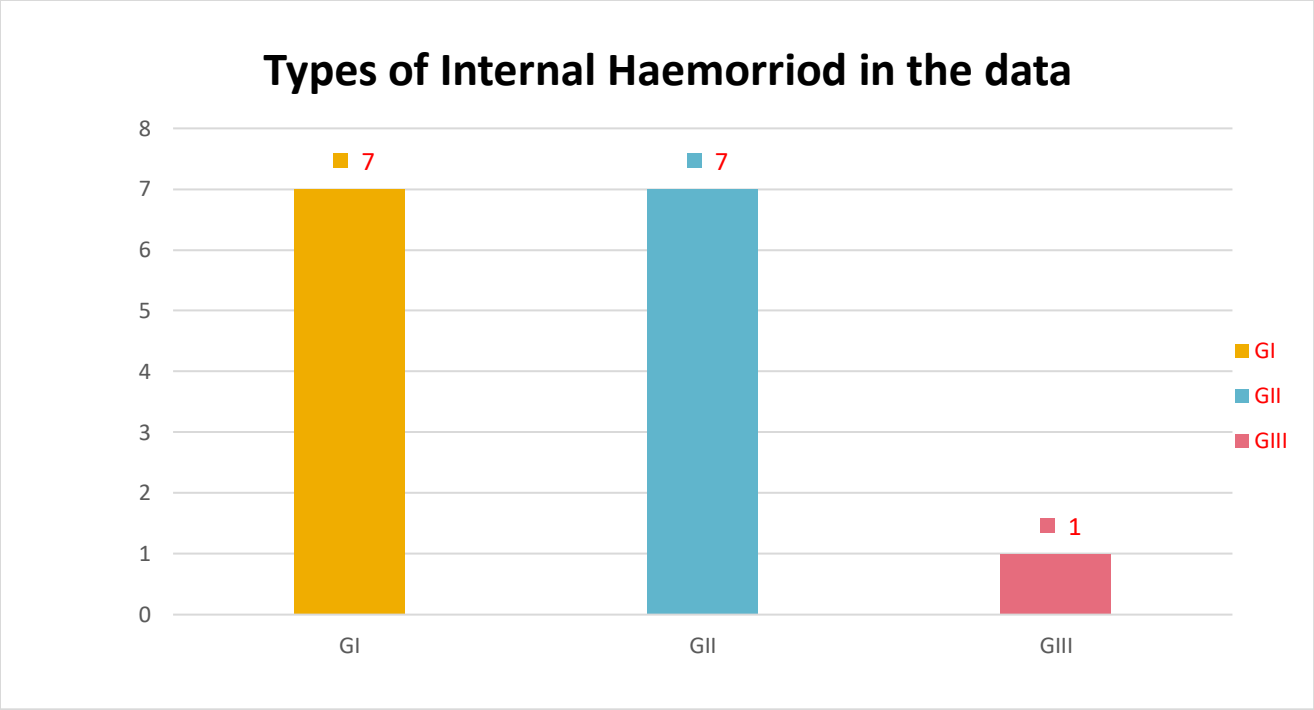

Figure 3: Types of internal hemorrhoid

5.5. Factors Associated with Hemorrhoids

5.5.1. Bivariable logistic regression between hemorrhoids and associated factors

To identify the association between independent and dependent variables (hemorrhoid), bi-variable logistic regression was applied. Covariates having a p-value of less than 0.25 in the bivariate analysis, such as sex of female, average monthly income (between 1500-8099), constipation, physical exercise, chewing chat, straining, sitting for a long time, eating a low-fiber diet, regular heavy weight lifting, using fatty food, peppers, and spicy food, and smoking with a crude OR at CI of 95%, were considered for multivariate logistic regression (n=483). Table 6:

Table 6: Bivariable analysis of factors associated with hemorrhoids among adult patients visiting the surgical consultation clinic at Karamara and Jigjiga University Sheik Hasan Yabare Referral Hospital using crude OR

		Hemorrhoids		Crude OR (95% CI)	P Value
		Yes	No		
Sex	Male	40	192	1	
	Female	24	227	1.97(1.15-3.39)	0.014*
Average monthly income	<1500	3	23	1	
	1501-8099	28	274	1.28(0.36-4.52)	0.002*
	>9000	33	122	0.48(0.14-1.71)	
Constipation	Yes	41	170	0.37 (0.21-0.64)	0.000*
	No	22	249	1	
Physical exercise	Yes	17	35	0.366 (0.211-0.637)	0.000*
	No	47	384	1	
Family history of hemorrhoid	Yes	18	29	0.190 (0.098-0.369)	0.000*
	No	46	390	1	
Chewing chat	Yes	29	88	3.117(1.806-5.377)	0.000*
	No	35	331	1	
Straining	Yes	44	109	6.257 (3.532-11.084)	0.000*
	No	20	310	1	
Eating low fiber diet	Yes	39	112	4.276(2.475-7.388)	0.000*
	No	25	307	1	
Sitting for a long time	Yes	52	122	0.095(0.049-0.184)	0.000*
	No	12	297	1	
Regular heavy lifting	Yes	12	14	0.150(0.066-0.341)	0.000*
	No	52	405	1	
Using fatty food	Yes	44	158	0.275(0.157-0.484)	0.000*
	No	20	261	1	
Peppers and spicy food	Yes	58	180	12.835(5.418-30.407)	0.000*
	No	6	239	1	
Smoking	Yes	10	27	0.372(0.171-0.811)	0.000*
	No	54	392	1	

*= significant at p-value <0.25

5.5.2. Multivariate analysis of factors associated with hemorrhoids

After bivariate analyses, variables that have a p-value less than 0.25 were eligible for multivariate analysis in Table 7.

Table 7: Multivariable logistic regression using AOR with 95% CI

		Hemorrhoids		Adjusted OR (95% CI)	P Value
		Yes	No		
Sex	Male	40	192	1	
	Female	24	227	1.53(0.84-2.79)	0.000**
Average monthly income	<1500	3	23	1	
	1501-8099	28	274	0.41(0.10-1.57)	0.705
	>9000	33	122	0.54(0.29-0.99)	0.258
Constipation	Yes	41	170	2.04(1.13-3.69)	0.018**
	No	22	249	1	
Physical exercise	Yes	17	35	1.88(0.866-4.10)	0.114
	No	47	384	1	
Family history of hemorrhoid	Yes	18	29	2.90 (1.35-6.23)	0.006**
	No	46	390	1	
Chewing chat	Yes	29	88	1	
	No	35	331	1.332(0.596-2.976)	0.484
Straining	Yes	44	109	6.052(2.947-12.427)	0.000**
	No	20	310	1	
low fiber diet	Yes	39	112	1	
	No	25	307	0.835(0.396-1.761)	0.638
Sitting for a long time	Yes	52	122	7.576(3.258-17.614)	0.000**
	No	12	297	1	
Regular heavy lifting	Yes	12	14	2.234(0.791-6.307)	0.129
	No	52	405	1	
Using fatty food	Yes	44	158	1.054(0.463-2.399)	0.899
	No	20	261	1	
Peppers and spicy food	Yes	58	180	4.099(1.356-12.387)	0.012**
	No	6	239	1	
Smoking	Yes	10	27	0.700(0.259-1.889)	0.481
	No	54	392	1	

**= significant at p-value <0.05

6. DISCUSSION

The main objective of this study was to assess the prevalence of hemorrhoids and associated factors among adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Referral Hospitals of Jigjiga town in the Ethiopian Somali Region, Eastern Ethiopia.

This study showed that the prevalence of hemorrhoids was found to be 13.87% with a 95% CI of 10.1-16.1, which is higher than the results from the study of hemorrhoids in the United States, which revealed a prevalence rate of 4.4% (27), and the study conducted on the populations of Brazil, Czech Republic, France, Hungary, Italy, Romania, Russia, and Spain with the prevalence was 11% (28). This may be due to the difference in the underlying characteristics of the different study populations. Another reason might be the awareness of the study participants about the risk factors of hemorrhoids, such as having enough water to drink, a balanced diet, and roughage food to prevent constipation.

This study also showed that the prevalence is lower than in other studies, such as in Japan, where the prevalence of hemorrhoids reached up to 55% (29). In India, a cross-sectional study of 1-year duration conducted in NIUM hospital between January 2015 and December 2015 showed to have a prevalence of 50.6% (30). In Burkina Faso, studies have been conducted in 1995 and 2007 on hemorrhoids, which indicated a prevalence of 29.6% and 60%, respectively (31). In Gabon, Bangui, and Malitheir prevalence of hemorrhoids is 38.5%, 58.88%, and 30.4%, respectively (32). In Austria, the nationwide health care program planned for screening hemorrhoids to get the prevalence of hemorrhoid disease between 2008 and 2009 as a prospective study in four medical institutions of 976 participants; 380 were hemorrhoids, and the prevalence of hemorrhoids was 38.93% (33). This may be due to the difference in lifestyle modification practice and less availability of roughage food to prevent constipation.

The finding of this study is also in line with the study done in Ethiopia at the University of Gondar from February to May 2021 with a prevalence of 13.11% (34). This study also assessed some of the risk factors and found out that sitting for a long time, straining, using peppers and spicy food, constipation, family history, and female sex are significantly associated with hemorrhoids. The study reveals that sitting for a long time was around 7.6 [AOR = 7.576 (95% CI: 3.258-17.614) p = 0.000] times higher as compared to their counterparts. This finding was in line with the study done in the USA, which revealed the risk factors of hemorrhoids were prolonged sitting (35). The

possible justification is that sitting too long dilates the blood vessels around the buttock and the anal area, which leads to weakening and rupturing of the tiny blood vessels.

Being strained was 6 [AOR = 6.052 (95% CI: 2.947-12.427) p = 0.000] times more likely to develop hemorrhoids compared to non-strain. This is consistent with other studies done in the USA that indicated straining was one of the major risk factors for hemorrhoids (35). This might be due to intestinal parasites like worms of the genus Taenia and other microorganisms that affect the lower part of the gastrointestinal tract.

The odds of having a hemorrhoid were 4 [AOR = 4.099 (95% CI: 1.356-12.387), p = 0.012] times higher among participants who eat spicy food as compared to their counterparts. This study was supported by other findings done in India showing high intake of spicy food is a major risk factor for hemorrhoids (4). Another study done in France also showed that spices and pepper are indicated as risk factors for hemorrhoids (36). The reason can be irritation of the mucosal wall of the anus, which can cause a wound of blood vessels surrounding the internal anal canal.

The study also indicated that the family history of hemorrhoids is positively related to hemorrhoidal disease, having 3 [AOR = 2.90 (95% CI: 1.35-6.23) p = 0.006] times more likely to be hemorrhoidal compared to a non-family history of hemorrhoids. This finding was in line with the data from French, which related to hemorrhoid risk factors that indicated heredity had been reported to be a risk factors (36). This may be due to lifestyle adaptation; if the family adapts its lifestyle, which is associated with risk factors of hemorrhoids, they will develop.

This study found that constipation was 2 [AOR = 2.04 (95% CI: 1.13-3.69) p = 0.018] times more likely to develop hemorrhoids when compared to non-constipated cases. This finding is also supported by the study done at the University of Gondar, Ethiopia, from February to May 2021 (34).

The possible justification is that the temperature difference, which leads to water loss in this study area, leads to constipation, which is associated with risk factors for the development of hemorrhoids. In addition to that, commonly the people living in this area used less fiber food.

According to this study, the sex of females was 1.53 [AOR=1.53 (95% CI: 0.84-2.79) p=0.000] times more likely to develop hemorrhoids than the sex of males, because in this region the adult females are fatter than adult males. The possible reasons were intra-abdominal pressure increment during pregnancy and obesity. The data from Korea indicated that obesity was the risk factor for hemorrhoids (37).

7. STRENGTH AND LIMITATION

7.1. Strength of study

This was the first local study that tried to indicate the prevalence of hemorrhoids and associated factors among adult patients at the Surgical Consultation Clinic in Karamara and Jigjiga University Sheik Hassan Yabare Referral Hospitals of Jigjiga town in the Ethiopian Somali Region, Eastern Ethiopia. Also, this study can contribute baseline information for future studies for those who are interested in this region.

7.2. Limitation of study

- Our study variable did not include abdominal obesity due to Shay for females, as well as religion, which was not allowed to measure female abdomen to know abdominal obesity.
- The study was localized to health facilities only; it does not include traditional healers for
- The study was done only in one zone, which may not be representative.

8. CONCLUSION

The study showed that the hemorrhoid cases were 67 (13.9%), and non-hemorrhoid cases were 416 (86.12%) participants; the prevalence of hemorrhoids was 13.87%. The study reveals that the variables such as sitting for a long time, straining, eating with peppers and spicy food, family history, constipation, and sex of females were statistically significant factors associated with hemorrhoids.

9. RECOMMENDATION

Based on our findings of this study, we set the following recommendations for

- Health education sectors need large-scale social mobilization activity related to hemorrhoids and awareness creation for factors associated with hemorrhoids at all levels.
- Health facilities staff (health post, health center, hospitals) it is advisable for the staff to give more knowledge to their patients on how to avoid hemorrhoids, minimize long time sitting and strain, and drink a lot of water, which facilitates food and prevents constipation, which is one of the factors associated with hemorrhoids.
- Health professionals should know also that the prevention of those factors associated with hemorrhoids is more important than curing and surgical intervention of hemorrhoids in health facilities. We recommended everyone not adapt frequency, use spicy foods, not strain during defecation, and do more exercise.

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ANNEXES I: ENGLISH VERSION

Participant information sheet

Hello, my name is ----------I am here on behalf of: Tahir Muhumed Hussein, student of Anatomy Department, School of Medicine, College of Health Sciences, and AAU. He is conducting research in partial fulfillment of the requirement for the Degree of Master of Science (MSc) in Medical Anatomy and the study aims to assess the prevalence of hemorrhoids and associated factors among adult patients at the Surgical Consultation Clinic of Karamara and Jigjiga University Sheik Hassan Yabare Hospitals of Jigjiga Town, Somali Region, Eastern Ethiopia.

Confidentiality: any information we gathered about you during this analysis will be kept private and your identity will be hidden until your file has been re-coded and stored in a safe location, if it becomes necessary to assess in some way, only the chief investigator will be able to associate your identity with a code number.

Right to refuse: The participants have the right to answer or to refuse participation in this study.

At any time because it is completely volunteer. 1. Yes 2. No

If yes, proceed. If not, thanks, and stop here

Contact address: if you have any questions or concerns about the study or the procedure at any time please contact Tahir Muhumed Hussein (BSc), Addressed: School of Medicine, College of Health Sciences, Jigjiga University (JJU)

Cell phone: +251-951113199

E-mail: tmuhumed@gmail.com

ANNEXES I: QAYBTII AFSOOMALIGA

Warqada xogta lawaraystaha

Hallo, magacaygu waa ----------waxaan ka joogaa halkii daahir muxumed xuseen oo ah arday katirsan jaamacada Adis Ababa, kuliyada caafimaad, waaxda anatomiga. wuxuusamaynayaa cilmibaadhis ku saabsan xograadinta shayda saabab babaasiirta,daraasaadkan oo qaybka ah dhamaytirka dhigriiga 2 aad ee anatomiga.

Xogtan ururinteeda wax qorshaysan in laga soo ururiyo lambada dhakhtar eek ala ah dhakhtarka layidhaahdo kaaraamardha iyo djhakhtarka isagana layidhaahdo sheekhxasan Yabaree rifeeral husbitaal labadaa dhakhtar oo gudhexyaala magaalada caasimada kililka shanaad ee bariga itoobiya.

Sirta Xogtan: dhamaan waxaan weydiinayno bukaan ku waa noo sir loomana baahna in ay cidkale ogaato waxaan bukaanka weydiinayno. aylagamamaarmaan noqotan waxaa xaq u le unuu su aalo kaweydiiyo cidan cilmibaadhista wadaa,waxaa xogta lagu qoran waan xafidaynaa oo cidkale ma ogaan karto

Xuquuqdan Xogtan: shaqsigu wuxuu xaq uleeyahay inuu xogta kusiiyo iyo inuu kusiin waayo labadaba, hadaba hadii uu xogta kusiiyo ku soco hawshaada, haddii uu ku siin waayona umahad celiyoo halkaa ku jooji

Cidda lagala xidhiidhayo: haddii aylagamamaarmaan noqoto in ad u haahato arimo khuseeya cilmibaadhistani laxidhiidh daahir muxumad xuseen oo katirsan kuliyada caafimaadka, waaxda iskuulka culuunta dhakhtanimada ee jaamacada jigjiga ee kutaala caasimada kililka shanaad, bariga itoobia

Tilifoonkiisuna waa: +251-951113199 E-maylkiisuna waa: tmuhumed@gmail.com

ANNEXES II:

Questionnaires (English version)

PART I: Socio-demographic study

S.NO	Questions					Response
Q101	Number1-483					
Q102	Age	19-29	30-49	50-59	>60	
Q103	Sex	1.Male□			2. Female □	
Q104	Residence	1.Urban□			2. Rural □	
Q105	Religion	1. Muslim □ 3. protestant □			2. Orthodox □	
Q106	Marital status	1. Single □ 3.Divorced□			2. Married □ 4.Widowed□	
Q107	Occupation	1. Shopkeeper □ 3. Driver □ 5.Teacher□ 7. Office worker □			2. Student □ 4. Housewife □ 6. Farmer □ 8. Others □	
Q108	Educational status	1.no formal education □ 3. intermediate □ 5. collage and above □			2. primary □ 4. Secondary □	
Q109	Ethnicity	1. Somali □ 3. Gurage □			2. Oromo □ 4. Others □	
Q110	Average monthly income	1.<1500 2.1501-8099 3.>9000--Birr				

Part two: Haemorrhoid pattern (classification)

S/NO	Questions	Response				Remark
Q111	Hemorrhoids	Yes□		No □		
Q112	Types of haemorrhoids if Q111 is (2) skip Q113	1. External □		2. Internal □		
Q113	Internal haemorrhoids	1-GI	2-GII	3-GIII	4-GIV	
		□	□	□	□	
Q114	Symptomatic haemorrhoids	Yes □		No □		
Q115	if Q114 is yes, there are 6 options and each one has yes(1)and No (2)	1. Pain at defecation Yes /No □ 4. Mucous discharge Yes /No □		2. Analitching Yes/No 5. Back pain Yes /No		3.Bleedingy/n 6. Another y/n

Part three: Assessment of Associated Factors of Haemorrhoids

S/NO	Questions	Response			Skip
Q116	Constipation	Yes □		No □	
Q117	Diarrhea	Yes □		No □	
Q118	Parity 1. Nulli para	2.Primipara	3. Multipara	4. Grand multipara	
Q119	Weight ------ kg				
Q120	Height ------ m				
	BMI -------Kg/m^2	1, 2, 3, 4, 5, 6, 7, 8, 9			
Q121	Alcohol	Yes □		No □	
Q122	Physical exercise	Yes □		No □	
Q123	Family history	Yes □		No □	
Q124	Chewing chat	Yes □		No □	
Q125	Straining	Yes □		No □	
Q126	Eating a low-fiber diet	Yes □		No □	<5.45 g/d
Q127	Sitting for a long time	Yes □		No □	
Q128	Regular heavy lifting	Yes □		No □	

Q129	Chronic cough	Yes □	No □	
Q130	Using fatty food	Yes □	No □	
Q131	peppers and spicy food	Yes □	No □	
Q132	Smoking	Yes □	No □	
Q133	Systolic	----------		
Q134	Diastolic	----------		
Q135	Blood pressure	1--------2----------3---------		

LIISTOOYINKA XOG URURINTA QAAYBTEEDA SOOMALIGA AH

II-QAYBTA SOOMAALIGA: qaybtakoowaad:

Ogaanshaharasmiga ah eeastaamahabulsheed

S/No	Suaalaha	Jawaabjelinta		Katalobixi
Q101	Tiradaliiskanxogta			
Q102	Da' da			
Q103	Jinsiga	lab □	Dhidig□	
Q104	Halkuudaganyahay	1. magaalo□	2. miyi□	
Q105	Diintiisa	1. islaam□ 3-beendee□	2.ortodhogos□	
Q106	Xaaladaguurka	1. doob/ gashaanti□ 3. lafuray□	2.Guursaday/guursatay□ 4. furay□	
Q107	Shaqada	1. Tukaanhaye □ 3. Dirawal□ 5. Macalin□ 7. Xafiis□	2. Arday/arrayed □ 4. Gurijoo □ 6. Beerqodato□ 8. Wixiiintaakasoohadha□	
Q108	Dhinacawaxbarashada	1.malahawaxbarashodugs□ 3. dugsi-dhexe□ 5.koolaj iyowixiikasareeya□	2. dugsi-hoose□ 4. dugsisare□	
Q109	Qoomiyada	1.soomal 2oromo 3. gurage 4.kuwkale		
Q110	Lacagtasoogashabisha	---------- birr		

Qaybtiilabaad ee dhinaca babaasiirta

	Suu alpha	Jawaabahooda				Talobixinta
Q111	babaasiir	Haa □			Maya □	
Q112	Noocyadababaasiirta	Dabadda □			Gudaha □	
Q113	Noocyadababaasiirtagudaha Heerkeeda	H I □	H II □	H III □	H V □	H=heerka
Q114	Astaamihiimajiraan	Haa□			Maya □	
Q115	Haahadaytahayjawaabtu	Xanuunxiligasaxarada □ Dheecaan □ Dhiig □			Cuncun□ Dhabarxanuun □	

Qaybtasadexaa: Raadintaqodobadahalista u ah babaasiirta

SN0	Suaalaha	Jawaabahooda		Talobixin
Q116	Calooltaag	Haa □	Maya□	
Q117	Shuban	Haa □	Maya□	
Q118	Uurka	Haa □	Maya□	
Q119	Miisaanka	……...-….kg		
Q120	Dhererka	…….....mitre		
	BMI	…….....Kg/M^2		
Q121	Khamri	Haa □	Maya □	
Q122	Jimicsi	Haa□	Maya□	
Q123	Hido	Haa □	Maya □	
Q124	Jaad	Haa □	Maya□	
Q125	jiirasho	Haa □	Maya □	
Q126	Cuntooyinka ganka leh	Haa □	Maya □	
Q127	Fadhiga xad dhaaf ah	Haa□	Maya □	
Q128	Qaadidawaxculussijoogta ah	Haa □	Maya □	
Q129	Qufacjoogto ah	Haa □	Maya □	
Q130	Isticmaalka cuntooyinkaduxleeyda	Haa □	Maya □	
Q131	Isticmaalkaqajidaiyo cuntooyinka xawaashkaleh	Haa □	Maya □	
Q132	Sigaarcabidda	Haa □	Maya □	
Q133	Cabirka saree dhiigkarka	…….mmhg		
Q134	Cabirka hoosee dhiigkarka	…….....mmhg		