



**ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDECINE DEPARTMENT OF SURGERY DIVISION OF
GI SURGERY, COLORECTAL SURGERY UNIT**

**PREVALENCE AND DETERMINANTS OF TREATMENT CHOICES FOR
HAEMORRHOIDS AMONG THE RESIDENTS OF ADDIS ABABA,
ETHIOPIA, A COMMUNITY-BASED STUDY, 2024**

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**A THESIS SUBMITTED TO AAU, CHS, DEPARTMENT OF SURGERY,
COLORECTAL SURGERY UNIT; IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR SUBSPECIALITY CERTIFICATE IN COLORECTAL
SURGERY.**

JULY, 2025

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Research thesis submission form

Title of the research project	Prevalence and determinants of treatment choices for Haemorrhoids among the residents of Addis Ababa, Ethiopia, a community-based study.
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Study periods	October 2024- December 2024
Study area	Addis Ababa city
Total estimated cost of the study	168,560 ETB
Date	July 2025

Declaration

This is to certify that the thesis paper entitled with “Prevalence and determinants of treatment choices for Hemorrhoids among the residents of Addis Ababa, Ethiopia, a community-based study,2024”, is submitted in partial fulfilment of the requirements for the subspeciality certificate in colorectal surgery in the department of surgery, Addis Ababa University. It is a record of original work carried out by me and has never been submitted to this or any other institutions to get any other degree or certificate. The assistance and help I received during the course of this thesis development is duly acknowledged.

Dr. Tadesse Habteyohannes

Name of the candidate

Signature

Date

Approval sheet

I hereby certify that I have supervised, read, and evaluated this thesis paper titled with “Prevalence and determinants of treatment choices for Hemorrhoids among the residents of Addis Ababa, Ethiopia, a community-based study,2024” conducted by Dr. Tadesse Habteyohannes under my guidance. I approve this thesis to be submitted for oral defense.

Dr. Zelalem Asefa Gobeze

Name of advisor

Signature

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Date

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Abbreviations

- AAU- Addis Ababa University
- AOR- Adjusted Odd Ratio
- AU- Africa Union
- BMI- Body Mass Index
- CHS- Collage of Medicine and health science
- CI- Confidence Interval
- ETB- Ethiopian Birr
- IRB- Institutional Review Board
- SPSS- Statistical Package for the Social Sciences
- TM- Traditional Medicine
- UNECA- United Nations Economic Commission for Africa

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Abstract

Background: Hemorrhoids are a common anorectal condition influenced by sociodemographic, lifestyle, and healthcare factors. This study explores the prevalence, risk factors, and determinants of treatment preferences among residents of Addis Ababa, Ethiopia, offering insights into modern and traditional healthcare utilization.

Methods: A cross-sectional study was conducted with 630 participants, achieving a 99.5% response rate. Data were collected using structured interviews and analyzed using descriptive statistics and logistic regression to identify determinants of hemorrhoid prevalence and treatment choices.

Results: The prevalence of hemorrhoids was 6.8%. Significant determinants included smoking (AOR = 4.5, 95% CI = 1.24–16.57), constipation in the past year (AOR = 4.7, 95% CI = 2.35–9.23), and awareness of treatment options (AOR = 3.7, 95% CI = 1.74–7.87). Conservative treatment preferences were strongly linked to older age (≥ 60 years, AOR = 10.7, 95% CI = 2.89–39.32), higher education levels (AOR = 3.9 for primary education, 95% CI = 1.44–10.85), and rectal symptoms (AOR = 5.2, 95% CI = 2.06–13.13). Modern medicine was preferred by 80.3% of participants, while 12.2% opted for traditional remedies. Despite high geographic access to healthcare facilities (99.5% within 5 km), financial constraints (41.7%) and lack of awareness (52.4%) were key barriers to treatment.

Conclusion: The study highlights a moderate prevalence of hemorrhoids, with strong associations to lifestyle and medical history factors. Treatment preferences reflect increasing trust in modern medicine, yet barriers such as affordability and awareness hinder optimal healthcare utilization. Integration of traditional practices with modern medicine and targeted education campaigns are recommended to improve prevention and management strategies.

Keywords: Hemorrhoids, prevalence, treatment preferences, traditional medicine, modern medicine, Addis Ababa, Ethiopia.

1 Introduction

1.1 Background

Hemorrhoids are vascular structures in the anal canal that physiologically assist with stool control but can become pathological when swollen or inflamed. Hemorrhoids are classified into internal and external types, based on their location relation to the dentate line. Internal hemorrhoids originate above the dentate line and are covered by columnar epithelium, and classified in to four grade, whereas external hemorrhoids are located below the dentate line and are covered by squamous epithelium(1).

Hemorrhoids is prevalent globally, with estimates suggesting that around 4.4% of the world's population is affected, though prevalence rates can vary significantly by region and population group(2,3).

Several risk factors are associated with the development of hemorrhoids. These include age, with higher prevalence noted in individuals aged 45 to 65 years, and pregnancy, due to increased abdominal pressure. Other risk factors include chronic constipation or diarrhea, prolonged sitting or straining, obesity, and dietary habits low in fiber(4). Sociodemographic characteristics such as gender, occupation, and socioeconomic status also play a role in the incidence of hemorrhoids. For instance, individuals with sedentary jobs are at higher risk, while those with higher socioeconomic status may have better access to preventive care and treatment options(5).

Clinically, hemorrhoids often present with symptoms such as painless rectal bleeding, pruritus, swelling, and prolapse(4). Internal hemorrhoids typically manifest with bright red blood per rectum, usually noted on toilet paper or dripping into the toilet bowl. In contrast, external hemorrhoids can cause significant pain if thrombosed and present with swelling and discomfort around the anal region. Diagnosis is generally made through physical examination, which includes a digital rectal exam and anoscope to visualize internal hemorrhoids. In certain cases, sigmoidoscopy or colonoscopy may be warranted to rule out other causes of rectal bleeding(6).

The management of hemorrhoids varies widely, ranging from conservative treatments to more invasive procedures(7). Conservative management includes dietary modifications, use of

laxatives, and topical treatments. Minimally invasive procedures such as rubber band ligation, sclerotherapy, and infrared coagulation are commonly used for internal hemorrhoids. Surgical options, including hemorrhoidectomy and stapled hemorrhoidopexy, are reserved for more severe cases(8). Additionally, traditional remedies and practices, such as the use of herbal preparations and sitz baths, are still prevalent in many cultures and can influence treatment choices.

The choice of treatment modality is influenced by several factors, including the severity of symptoms, patient preference, and availability of healthcare resources(9). Conservative treatments are often preferred for mild cases due to their non-invasive nature and lower cost. However, they may require longer periods to resolve symptoms and have higher recurrence rates. Minimally invasive procedures are effective for moderate cases but can be associated with discomfort and require multiple sessions. Surgical treatments, while highly effective for severe cases, carry risks of complications such as pain, infection, and anal stricture(10).

The prevalence of hemorrhoids, coupled with sociodemographic characteristics, significantly impacts the choice of treatment modalities. Understanding these factors is crucial for healthcare providers to tailor effective treatment plans and improve patient outcomes. Moreover, the influence of sociodemographic factors on treatment choices highlights the need for culturally sensitive healthcare strategies and equitable access to care.

In regions like Addis Ababa, Ethiopia, where traditional and modern medicine coexist, a comprehensive understanding of these dynamics is essential for optimizing the management of hemorrhoids. However, socio-cultural beliefs and economic factors may influence the choice of treatment modalities. There is a need for comprehensive data on the prevalence and treatment choices for hemorrhoids in Addis Ababa to inform public health interventions(11).

1.2 Statement of the problem

Hemorrhoids are a significant health concern that can lead to severe pain, bleeding, and other complications if left untreated. Despite the availability of various treatment options, ranging from conservative management to surgical interventions, many patients in Addis Ababa may not receive appropriate care due to a lack of awareness, socio-cultural beliefs, or financial constraints.

Traditional healers play a significant role in the treatment of hemorrhoids in Ethiopia, and complications from these treatments can be severe, including infections, severe bleeding, incontinence, anal stenosis, and worsening of symptoms.

No community-based studies have been conducted in Ethiopia to assess the prevalence of hemorrhoids and the factors influencing treatment choices. This lack of data hampers the development of effective public health strategies to address the burden of hemorrhoids in the community. Identifying the prevalence of hemorrhoids and the factors associated with the choice of treatment modalities is essential for addressing this public health issue.

1.3 Significance of the study

This study will provide valuable data on the prevalence of hemorrhoids and the factors associated with the choice of treatment modalities in Addis Ababa. The findings will help to:

- Inform the healthcare professionals and the ministry about the disease burden in the community.
- Identify gaps in awareness and options to appropriate treatment options
- Point out the development of focused public health interventions to improve the management of hemorrhoids
- Improve understanding of the economic and socio-cultural factors affecting treatment choices, which can inform culturally sensitive and economically feasible healthcare solutions.

2 Literature review

1. Prevalence of Hemorrhoids

Hemorrhoidal disease is a prevalent anorectal condition worldwide. A cross-sectional study in the United States estimated the prevalence of hemorrhoids to be approximately 4.4% among the general population, with higher rates in adults aged 45-65 years(6). A multicenter study across Brazil, Czech Republic, France, Hungary, Italy, Romania, Russia, and Spain reported a prevalence rate of 11% among adults(12). In South Korea, a large-scale retrospective analysis using health insurance data found an incidence density of 13.9 per 1000 person-years in the diagnostic model and 5.7 per 1000 person-years in the surgical model, highlighting the disease's significant burden(13). A cross-sectional study done in young middle-aged adults showed the prevalence of hemorrhoidal disease 16.6%(14).

A descriptive cross-sectional study conducted in Makkah, Saudi Arabia the prevalence of hemorrhoids among the general population, 16% reported that they were diagnosed with hemorrhoid disorder(15).

In Africa, the prevalence of hemorrhoids is not as well-documented as in Western countries. However, a cross-sectional study in Nigeria reported a prevalence rate of 32.5% among commercial motorcyclists in Kaduna State, Nigeria(16). Another cross-sectional study in Port Harcourt, Nigeria, focusing on endoscopy patients, emphasized the commonality of hemorrhoidal disease(17).A study in Egypt to see the outcome of colonoscopy reported a prevalence of 18 % among adults(18).

In Ethiopia, research on the prevalence of hemorrhoids is emerging. A cross-sectional study at the University of Gondar Comprehensive Specialized Hospital found a prevalence rate of 13.1% among adults visiting the surgical outpatient department, indicating that hemorrhoidal disease is a significant health concern in the country(19).

A cross-sectional study assessed the prevalence and associated factors of perianal complications(22.5%), including hemorrhoids(7.3%), among mothers in the puerperium period at Debre Tabor Referral Hospital(20). The prevalence of hemorrhoids among the studied population, highlighting the need for focused research to better understand the disease's impact.

2. Sociodemographic Findings

Sociodemographic factors significantly influence the prevalence of hemorrhoids. Globally, studies indicate a higher prevalence among individuals with higher income levels, urban residents, and those aged between 45-65 years. A retrospective study in South Korea found that men and individuals in metropolitan areas were more frequently affected(13). Additionally, lifestyle factors such as high alcohol consumption and low physical activity were identified as risk factors(21).

Other cross-sectional study done in Korea it was higher in females than in males (17.2 vs. 16.3%). Compared to men, the prevalence of hemorrhoidal disease was higher in parous women and lower in nulliparous women. The prevalence of hemorrhoidal disease was higher in older age, females, ever-smokers, and hypertensive participants(14).

A cross sectional study in Nigeria, misconceptions about hemorrhoids are widespread (73%), with many attributing the disease to dietary habits such as sugar intake. The prevalence is higher among males and older individuals, particularly those in urban settings(22). The influence of sociodemographic factors in Africa reflects a need for targeted public health interventions.

In Ethiopia, sociodemographic factors such as age, sex, and lifestyle habits also play a crucial role in the prevalence of hemorrhoids. The study in Gondar found a higher prevalence among older adults and those with certain lifestyle risk factors like low fiber intake and obesity(19).

The study conducted in Debre Tabor highlighted that female, particularly those in the puerperium period, are at a higher risk of developing hemorrhoids(20). This indicates a significant sociodemographic determinant that should be considered in public health planning and interventions.

3. Choice of Treatment Modalities

Globally, the management of hemorrhoids varies widely. Conservative treatments such as dietary modifications and topical medications are commonly recommended for mild cases. Minimally invasive procedures like rubber band ligation and sclerotherapy are preferred for moderate cases, while surgical interventions such as hemorrhoidectomy are reserved for severe cases(6,23,24).

In Africa, traditional medicine plays a significant role in the treatment of hemorrhoids. A cross sectional study in Tanzania reported that 84.7% of patients used herbal remedies before seeking hospital treatment(25). In Ethiopia, a substantial proportion of the population relies on traditional healers(11,26–30). A cross sectional study conducted in Addis Ababa 52% reported that traditional healers' clinics were the first choice for many patients due to perceived efficacy and dissatisfaction with modern medicine(11). This underscores the importance of integrating traditional practices with modern healthcare approaches.

A conservative treatments are commonly utilized, with an increasing trend towards minimally invasive procedures for moderate cases(6). However, accessibility to advanced surgical treatments remains limited, necessitating improved healthcare infrastructure and training.

A qualitative study done to explore factors influencing the use of traditional medicine in Wolaita zone, Southern Ethiopia, involving 45 in-depth interviews with traditional practitioners, patients and caregivers revealed that the use of traditional medicine was influenced by five major themes: perceived inefficacy of biomedicine, perceived incurability of some diseases via biomedicine, testimonies of effectiveness of traditional medicine, affordability of traditional medicine and feeling of embarrassment to present medical conditions to practitioners of biomedicine(31).

A community-based cross-sectional study to assess the knowledge, attitude, and practice of the community on traditional medicine in Debre Tabor town and three-fourths, 80.1% of the participants had good knowledge. 39.3% of the participants had a good attitude and 36.1% of the participants used traditional medicines in their lifetime for different ailments. From all the participants who use traditional medicine, 28.3% encountered minor adverse effects(29).

In Addis Ababa, the city's healthcare facilities provide various treatment options, ranging from conservative management to surgical interventions and a cross sectional study done at Menelik hospital to show the pattern and surgical outcome of colorectal and perineal conditions, hemorrhoids accounts 22% of all perineal admission that shows the burden and need of surgical intervention(32).

However, socio-cultural beliefs on modern and traditional medicine, complication from treatment and economic factors like cost may influence the choice of treatment modalities(33).

In conclusion the prevalence of hemorrhoids and associated factors such as sociodemographic determinants and treatment modalities exhibit significant variability across different regions. In Addis Ababa, Ethiopia, the integration of traditional and modern medical practices, along with targeted public health interventions, can enhance the management and treatment outcomes for hemorrhoidal disease. Further research is necessary to comprehensively understand the disease's epidemiology and develop effective healthcare strategies tailored to the local context.

3 Objectives

3.1 General Objectives:

- To assess the prevalence and determinants of treatment choices for hemorrhoids among residents of Addis Ababa, Ethiopia.

3.2 Specific Objectives:

- To determine the prevalence of hemorrhoids in Addis Ababa.
- To identify factors associated with the choice of treatment modalities.
- To assess the awareness and attitudes of the community towards different treatment options for hemorrhoids.

3.3 Conceptual framework

Key Components of the Framework includes:

1. Prevalence of Hemorrhoids:

- Definition: The proportion of the population in Addis Ababa experiencing hemorrhoids at a given time.
- Measurement: The presence of self-reported symptoms, clinical diagnoses, or both.

2. Associated Factors Influencing Prevalence:

- Socio-Demographic Factors:
 - Age
 - Sex
 - Educational Level
 - Income Level
 - Religion
 - Occupation

- Lifestyle Factors:
 - Dietary Habits (e.g., fiber intake)
 - Physical Activity Level
 - Body Mass Index (BMI)
 - Smoking and Alcohol Consumption
- Medical History:
 - History of Constipation
 - Pregnancy
 - Previous Anorectal Conditions

3. Choice of Treatment Modalities:

- Conservative Management:
 - Dietary Modifications
 - Topical Treatments
 - Oral Medications
- Traditional Treatments:
 - Herbal Remedies
 - Treatments by Traditional Healers
- Surgical Interventions:
 - Hemorrhoidectomy
 - Rubber Band Ligation

4. Factors Influencing Treatment Choices:

- Socio-Cultural Factors:
 - Cultural Beliefs
 - Perceptions of Modern vs. Traditional Medicine
- Accessibility and Availability:
 - Proximity to Healthcare Facilities
 - Availability of Medical Supplies and Personnel
- Economic Factors:
 - Affordability of Treatments
 - Insurance Coverage
- Knowledge and Awareness:
 - Awareness of Hemorrhoid Treatments
 - Health Literacy

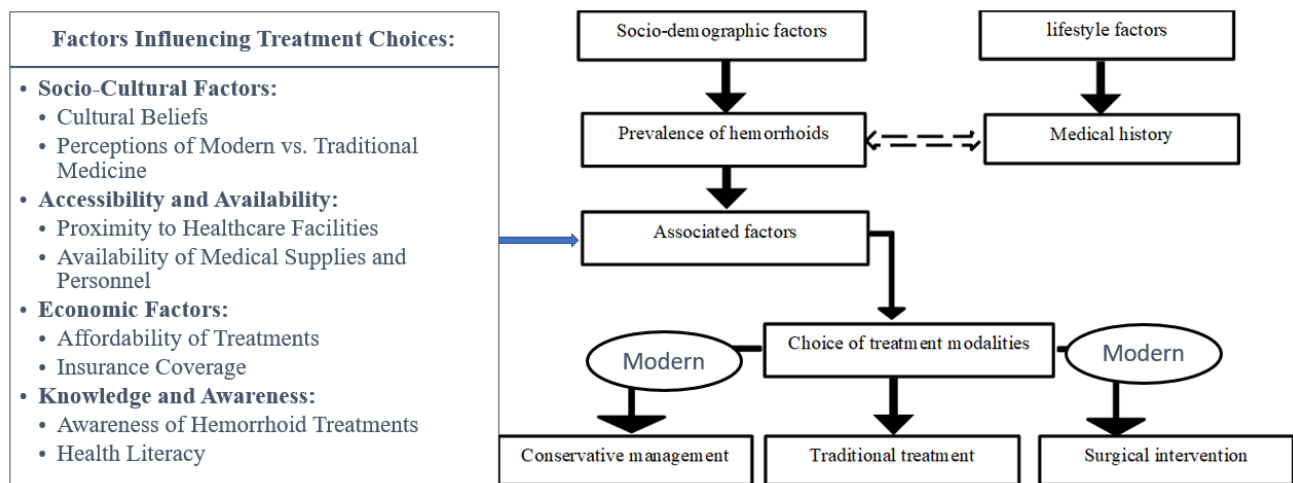


Figure 1- visual illustration of the conceptual frame work to understanding how various factors interact and influence the prevalence of hemorrhoids and the selection of treatment methods

Explanation:

1. **Socio-Demographic Factors:** These includes age, sex, education, income, and occupation. They influence both the prevalence of hemorrhoids and the choice of treatment modalities.
2. **Lifestyle Factors:** These encompass dietary habits, physical activity, and BMI, which can affect the risk of developing hemorrhoids.
3. **Medical History:** Includes conditions such as constipation, pregnancy, and prior anorectal issues, impacting both the prevalence and treatment choices.
4. **Choice of Treatment Modalities:** The choice among conservative management, traditional treatments, and surgical interventions is influenced by socio-cultural, accessibility, economic, and knowledge factors.

4 Methodology

4.1 Study Area and period.

The study was conducted among residents of Addis Ababa, Ethiopia from September 2024 to December 2024. The study carried out in Addis Ababa city administration, which is the capital city of Ethiopia. Addis Ababa, being the political capital and the most important commercial and cultural center of Ethiopia, is geographically located at the heart of the nation, 9°2'N latitude and 38°45'E longitude. Its average altitude is 2,400 meter above sea level(34). Addis Ababa is a seat of international organizations such as the African Union (AU) and the United Nations Economic Commission for Africa (UNECA). It is subdivided into 11 sub cities and its current population is estimated to be 5,703,628(35,36).

4.2 Study Design

A community based cross sectional study design used to assess the prevalence of hemorrhoids and the factors associated with the choice of treatment modalities among residents of Addis Ababa, Ethiopia.

4.3 Source Population.

All adult residents of Addis Ababa aged 18 years and above.

4.4 Study Population.

Residents of Addis Ababa who fulfill the inclusion criteria and were selected to be included in the sample.

4.5 Sample size and sampling technique

4.5.1 Sample Size Determination

Sample size was determined by using a single population proportion formula considering the following assumptions: Z= the standard score corresponding to 95% confidence level; 5% (margin of error); and P= estimated prevalence of hemorrhoids (assuming 50% for maximum variability). Accordingly, the sample size is determined by the following formula;

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

Where: - n = Sample size P = estimated prevalence of hemorrhoids (assuming 50% for maximum variability), d = margin of error tolerated (0.05)

$(Z_{\alpha/2})$ = Confidence level; taking 95% level of confidence interval,

Based on the above assumption $n = 384$, Since we used stratified method, we have a design effect and was multiplied with 1.5 that give $384 \times 1.5 = 576$.

By adding 10% for non-response rate, the final sample size was 633.

4.5.2 Sampling technique and sampling procedure

A stratified random sampling technique used so that the population across 11 sub-cities, each with different population sizes was stratify by sub-city ensures that each area was adequately represented. Then we draw a random sample from each sub-city proportional to its population size.

To select individuals within each woreda (district) after determining the sample size for each sub-city, we followed a systematic and random process to ensure representativeness and minimize bias as illustrated in the following table.



Nb: - Assumption of the households was based on the statistics done in Ethiopia that the number of people living in one household is 5.

Figure2 : - Distribution of the sample size proportionally across the sub-cities, districts and household label based on their relative population. The one shade with orange is with stratified random sampling, with blue is systematic random sampling and with red is lottery method.

Table 1: - Distribution of the sample size proportionally across the sub-cities, districts and household label based on their relative population.

S. N	Sub-City	Population	Woreda	Total Households	Households per Woreda	Clustered Sample Size	Sample Size per Woreda	Sampling Interval at household
1	Addis Ketema	503,028	10	100,606	10,061	56	6	1,677
2	Akaki Kaliti	337,395	10	67,479	6,748	38	4	1,687
3	Arada	400,202	10	80,040	8,004	45	5	1,601
4	Bole	602,316	11	120,463	10,951	68	6	1,825
5	Gulele	529,056	10	105,811	10,581	59	6	1,764
6	Kirkos	420,382	11	84,076	7,643	47	4	1,911
7	Kolfe Keranio	850,672	11	170,134	15,466	95	9	1,719
8	Lideta	379,851	10	75,970	7,597	42	4	1,899
9	Nefas Silk-Lafto	617,415	11	123,483	11,226	70	6	1,871
10	Yeka	680,468	11	136,094	12,372	76	7	1,767
11	Lemi Kura	382,843	10	76,569	7,657	43	4	1,914
	Total	5,703,628				640		

4.6 Variables of the study

4.6.1 Dependent variable:

Choice of treatment modality (Modern (conservative, surgical) traditional, or both).

4.6.2 Independent variables:

- Socio-demographic factors (age, sex, education, income)
- Clinical factors (severity of symptoms, duration of illness)

- Awareness and attitudes towards treatment options.

4.7 Inclusion criteria:

All residents of Addis Ababa age ≥ 18 years

Willingness to provide informed consent

4.8 Exclusion criteria:

- Respondents who declined or were unable to give consent.
- Those ≤ 18 year of age.

4.9 Data Collection instrument and procedure

Data was collected using a structured questionnaire through face-to-face interviews. The questionnaires include sections on socio-demographic information, clinical history of hemorrhoids, treatment choices, and awareness and attitudes towards different treatment options. The questionnaire was pre-tested on a small sample, and few modifications was made based on the pre-test results that ensure clarity and reliability.

4.10 Definition of operational terms

- Hemorrhoids: Swollen and inflamed veins in the lower rectum and anus, classified into internal (inside the rectum) and external (under the skin around the anus).
- Prevalence: The proportion of a population found to have a condition(hemorrhoid) at a specific time and in this scenario, prevalence is a self-reported hemorrhoidal history diagnosed by health professional.
- Treatment Modalities: Various methods used to treat hemorrhoids, including conservative management (dietary changes, topical treatments), traditional treatments (herbal remedies, treatments from traditional healers), and surgical interventions (hemorrhoidectomy, rubber band ligation).
- Socio-Demographic Factors: Characteristics of individuals in the population, such as age, sex, education level, income, and occupation.
- Clinical Factors: Medical characteristics related to the patient's condition, such as severity and duration of hemorrhoid symptoms.

- Traditional Medicine: Health practices, approaches, knowledge, and beliefs incorporating plant, animal, and mineral-based medicines, spiritual therapies, manual techniques, and exercises, used individually or in combination to treat, diagnose, and prevent illnesses or maintain well-being.
- Modern treatment for hemorrhoids: -Treatments (Conservative, topical, oral or surgical) given for a hemorrhoid patient by a health professional.
- Treatment preference of the participant: - Type of treatment (Traditional, Modern or both) that the participant believes is most appropriate or effective.
- Treatment offered for the participant: - any type of treatment given for the participant and he she had the experience of using it. It could be traditional, or modern (Conservative, topical, oral or surgery.)
- Awareness: - whether the participant is aware of the availability of various medical or traditional hemorrhoid treatments.
- Accessibility: - it is a cumulative effect of distance, affordability, availability as well as coverage of health insurance.
- Affordability: - The participant subjective assessment of whether they can afford the cost of treatment.
- Availability of Medical supplies and staff: - whether the nearby health facility has adequate staff and material for hemorrhoid treatment.
- Cultural beliefs influence on the treatment choice: - The extent to which cultural or traditional beliefs affect the participants decision in choosing treatment.

4.11 Data processing and analysis procedures

Data was coded and entered to Epi-Info version 7.1 and exported to SPSS version 26 for analysis. First descriptive analysis (using frequency, percentage) was done to describe the variables involved in the study. Bivariate logistic regression was employed to assess the association between each categorical variable with the outcome variable and to identify

candidate variables (with $p\text{-value} \leq 0.25$) and included in the multivariable logistic regression model. Then multivariate logistic regression model fitted using default variable selection method to identify variables independently associated with the outcome variable of interest at 5% significance level. The AOR and the corresponding 95% CI for the variables in the final model were reported. Level of significance is declared at $p\text{-value} \leq 0.05$.

4.12 Data quality control

To maintain data quality, an intensive one-day training was given to data collectors on the contents and procedures of data collection. The training included an orientation on how to get consent, making oneself familiar to the items of the questionnaire, interviewing techniques, how to administer the questions, principles of confidentiality, and role play of the data collection process.

The tool was pretested on (5%= 31 participant) on Akaki kality sub city of Addis Ababa residents which excluded from the study. During data collection, questionnaire was checked for its completeness on daily basis by the investigator. Intensive supervision was carried out by the investigator throughout the data collection period.

4.13 Ethical consideration

Ethical approval was obtained from Department of Surgery Research & Ethics Committee's (REC) of AAU, CHS. A formal letter of permission with protocol number DOS/REC/118/2024/2017 was given from AAU, CHS research and publication office. A written consent used to ensure the informed consent of study participants in the study after a full verbal explanation about confidentiality and their right to withdraw at any time during the data collection period.

4.14 Plan for dissemination of results

The results of the study will be disseminated to the Department of surgery one copy together with the detail analyzed finding, presentation during scientific conferences, publication in peer-reviewed journals, and reports to relevant stakeholders, including the Ministry of Health.

5 Result

5.1 Sociodemographic characteristics of the study participants

In this study 630 study participants were involved with a response rate of 99.5%. One-third (33.2%) of the study participants were in the age group of 21-30 years and 66.5% of the participants were female. Fifty-seven percent of the participants were married and 71.7% of them were orthodox in religion. Thirty-nine percent of the participants were completed secondary education level and 51% of them were unemployed. Forty-one percent (40.6%) of the participants had earn a monthly income of <1000ETB.

Table 1. The socio-demographic characteristics of study participants among the residents of Addis Ababa, Ethiopia, 2024.

Variable		Frequency	Percent
Age of the study participants in years	18-20	82	13
	21-30	209	33.2
	31-40	168	26.7
	41-50	80	12.7
	51-60	60	9.5
	>60	31	4.9
Sex of the study participants	Female	419	66.5
	Male	211	33.5
Marital status	Single	238	37.8
	Married	361	57.3
	Widowed	17	2.7
	Divorced	14	2.2
Religion	Orthodox	452	71.7
	Muslim	97	15.4
	Protestant	81	12.9
Education level	No formal education	80	12.7
	Primary	122	19.4
	Secondary	246	39
	Higher and above	182	28.9
Occupation	Employed	309	49
	Unemployed	321	51
Household monthly income	<1000	256	40.6
	1000-5000	217	34.4
	5001-10000	62	9.8
	>10000	95	15.1

5.2 Life style and dietary related characteristics of the study participants

Two-third of the participants had normal body mass index and 36% of the participants consumed high fiber foods, vegetables and fruits several times a week and 77.9% were daily engage in physical activity. Three-percent of the participants were smoked cigarette and 32.5% were drink alcohol. From those alcohol consumers, 4.9% drink in daily bases.

Table 2. Life style and dietary related characteristics of the study participants

Variable		Frequency	Percent
Body mass index	<18.5	64	10.2
	18.5-24.9	405	64.3
	25-29.9	130	20.6
	≥30	31	4.9
Frequency of eating high fiber foods, vegetables and fruits	Daily	48	7.6
	Several times a week	227	36
	Once a week	166	26.3
	Rarely	189	30
Frequency of engage in physical activity (labor work, sport)	Daily	491	77.9
	Several times a week	94	14.9
	Once a week	17	2.7
	Rarely	28	4.4
Smoking cigarette	Yes	19	3
	No	611	97
Drinking alcohol	Yes	205	32.5
	No	425	67.5
Frequency of alcohol consumption (n=205)	Daily	10	4.9
	Weekly	20	3.2
	Monthly	15	7.3
	Rarely	160	78

5.3 Medical history related characteristics of the study participants

A history of constipation within the last year was reported by 20.5% of participants, and 6.8% of the participants had been diagnosis with anorectal conditions like fistula abscess, warts and incontinence. More than nine percent of the participants had rectal bleeding, pain itching or lumps near the anus and 6.8% of the participants were diagnosed hemorrhage by the health care

professional. Eight percent, six percent and 0.6% of the participants had pain, bleeding and itching respectively.

Table 3. Medical history related characteristics of the study participants

Variable		Frequency	Percent	
Constipation in the past year	Yes	129	20.5	
	No	501	79.5	
Ever been pregnant (n=432)	Yes	248	39.4	
	No	184	29.2	
Ever been diagnosed with anorectal conditions like fistula abscess, warts and incontinence	Yes	43	6.8	
	No	587	93.2	
Rectal bleeding pain itching or lumps near the anus	No	570	90.5	
	Yes	60	9.5	
Specific symptoms they have	Have pain	Yes	53	8.4
		No	577	91.6
	Bleeding	Yes	39	6.2
		No	591	93.8
	Itching	Yes	4	0.6
		No	626	99.4
	Swelling	Yes	4	0.6
		No	626	99.4
Diagnosed with hemorrhoids by a health care professional	Yes	43	6.8	
	No	587	93.2	

5.4 The participants Treatment preference and influences

Eleven percent of the participants had a strong cultural influence on their treatment of choice, while 82.9% had no cultural influence on their hemorrhoid treatment choice.

Most of the participant (80%) of the participants had a modern hemorrhage treatment choice and 12% of them had tradition treatment choice and 8% had a choice of both modern and traditional treatment.

Almost all participants had <5km distance of health facility and 75.9% of the participants had available medical supplies and staff at the nearest facility. Thirty-three percent of the participants had health insurance that covers hemorrhoid treatments and 47.6% of the participants had an aware of treatment options for hemorrhoid.

Table 4. Types of hemorrhoid treatment preference and influences by the study participants

Variable		Frequency	Percent (%)
Do cultural beliefs influence your treatment of choice	Strong influence	70	11.1
	Moderate influence	38	6
	Little to no influence	522	82.9
The study participants preference for hemorrhoid treatment (Perception)	Traditional medicine	77	12.2
	Modern medicine	506	80.3
	Both traditional and modern medicine	47	7.5
Distance of the nearest health facility	<5km	627	99.5
	5-10km	3	0.5
Medical supplies and staff available at the nearest facility	Yes	478	75.9
	No	152	24.1
Did you find hemorrhoid treatments affordable	Yes	367	58.3
	No	263	41.7
Did you have health insurance that covers hemorrhoid treatment	Yes	209	33.2
	No	421	66.8
Aware of available treatment options for hemorrhoids	Yes	300	47.6
	No	330	52.4

5.5 Treatment option offered and related characteristics of the study participants

Only 13.5% of participants reported ever using traditional treatment, indicating a limited reliance on this approach. A negligible proportion of participants (1%) had undergone surgery for hemorrhoids.

Among the 17.3% of participants who had tried conservative treatment methods dietary changes were adopted by 38.5% of this group, demonstrating moderate awareness of the role of diet in managing hemorrhoids. Topical treatments were the most common choice, used by 77.1% of participants attempting conservative methods. Oral medications were least utilized, with only 15.6% opting for this approach.

Despite the availability of conservative treatments, the majority (82.7%) of participants did not explore these options.

Table 5. Treatment of choice related characteristics of the study participants

Variable			Frequency	Percent
Have you used traditional treatment	Yes		85	13.5
	No		545	86.5
Ever had surgery for hemorrhoid	Yes		6	1
	No		624	99
Have you tried any conservative treatments	Yes		109	17.3
		Dietary change	42	38.5
		Topical treatment	84	77.1
		Oral medication	17	15.6
	No		521	82.7

5.6 The determinant factors for traditional treatment choice of the study participants

In this study sex, education level, household monthly income and presence of pain was an association with traditional choice by bivariate logistic regression. The multivariate logistic regression revealed that study participants who had having pain has 2.6 folds increase its traditional treatment choice compared to its opposite compartment (AOR=2.6, 95%CI=1.32, 5.06) with neither education level nor house hold income significantly impacted traditional treatment preferences after adjustment. Male and female participants were equally likely to choose traditional treatments, showing no significant sex-based disparity.

Table 6. The bivariate and multivariate association between independent variable with choice of traditional hemorrhoid treatment among the residents of Addis Ababa, Ethiopia, 2024.

Variable	Traditional treatment choice		p-value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Sex						
Female	52	367	1			
Male	33	178	0.251	1.3(0.82, 2.09)	0.539	1.2(0.71, 1.90)
Education level						
No formal education	8	72	0.083	0.48(0.21, 1.09)	0.119	0.51(0.22, 1.19)
Primary	15	107	0.140	0.61(0.32, 1.18)	0.252	0.67(0.34, 1.33)
Secondary	28	218	0.035	0.56(0.33, 0.96)	0.092	0.62(0.35, 1.08)
Higher and above	34	148	1		1	
Household monthly income						
<1000	30	226	0.209	0.66(0.34, 1.27)	0.554	0.81(0.40, 1.63)
1000-5000	26	191	0.249	0.67(0.34, 1.32)	0.696	0.87(0.42, 1.79)
5001-10000	13	49	0.516	1.3(0.58, 2.96)	0.372	1.5(0.35, 3.37)
>10000	16	79	1		1	
Have pain						
Yes	14	39	0.005	2.6(1.32, 4.95)	0.006	2.6(1.32, 5.06)
No	71	506	1		1	

5.7 The determinant factor of conservative treatment choice of the study participants

In this study age, education level, ever been diagnosed with anorectal conditions, have rectal bleeding pain itching or lumps near the anus, ever been diagnosed hemorrhoid and medical supplies and staff available at nearest facility were an association with conservative treatment choice by bivariate logistic regression. The multivariate logistic regression revealed that study participant whose age of 21-30 and 51-60 and >60 years had 3.2, 3.6 and 10.7 folds increase its conservative treatment choice compared to those of age 18-20 years respectively and study participant whose education level of primary and secondary had 3.9 and 3 folds increase its conservative treatment choice compared to those of illiterate (AOR=3.9, 95%CI=1.44, 10.85,

&AOR=3.0, 95%CI=1.16, 7.81 respectively). Study participant having Have rectal bleeding pain itching or lumps near the anus had 5.2 folds increase its choice of conservative management compared to its opposite compartment (AOR=5.2, 95%CI=2.06, 13.13) and study participants ever been diagnosed hemorrhoid had 21.3 folds increase its treatment choice of conservative compared to its opposite compartment (AOR=21.3, 95%CI=5.34, 84.59) and study participant having Medical supplies and staff available at nearest facility were 4.1 folds increase its conservative treatment choice (AOR=4.1, 95%CI=1.92, 8.90).

Table 7. The bivariate and multivariate association between independent variable with choice of conservative treatment among the residents of Addis Ababa, Ethiopia, 2024.

Variable	Conservative treatment		p-value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Age of the study participants in years						
18-20	5	77	1		1	
21-30	32	177	0.041	2.8(1.05, 7.42)	0.210	1.9(0.69, 5.47)
31-40	40	128	0.002	4.8(1.82, 12.72)	0.023	3.2(1.17, 8.89)
41-50	13	67	0.047	2.9(1.01, 8.82)	0.225	2.1(0.64, 6.63)
51-60	10	50	0.051	3.1(0.99, 9.54)	0.040	3.6(1.06, 12.49)
>60	9	22	0.002	6.3(1.91, 20.74)	0.000	10.7(2.89, 39.32)
Education level						
No formal education	8	72	1		1	
Primary	25	97	0.053	2.3(0.98, 5.44)	0.008	3.9(1.44, 10.85)
Secondary	41	205	0.152	1.8(0.81, 4.02)	0.024	3.0(1.16, 7.81)
Higher and above	35	147	0.068	2.1(0.95, 4.86)	0.090	2.4(0.88, 6.33)
Ever been diagnosed with anorectal conditions						
Yes	22	21	0.000	6.1(3.18, 11.42)	0.098	0.31(0.08, 1.24)
No	87	500	1		1	
Have rectal bleeding pain itching or lumps near the anus						
No	70	500	1		1	
Yes	39	21	0.000	13.3(7.38, 23.85)	0.000	5.2(2.06, 13.13)
Ever been diagnosed hemorrhoid						
No	74	513	1		1	
Yes	35	8	0.000	30.3(13.55, 67.89)	0.000	21.3(5.34, 84.59)
Medical supplies and staff available at nearest facility						
Yes	97	381	0.001	2.9(1.58, 5.58)	0.000	4.1(1.92, 8.90)
No	12	140	1		1	

5.8 The prevalence of hemorrhoid among study participants

The finding of the study showed that 6.8% (n=43) had a diagnosis of hemorrhoid by health provider as shown in the figure below.

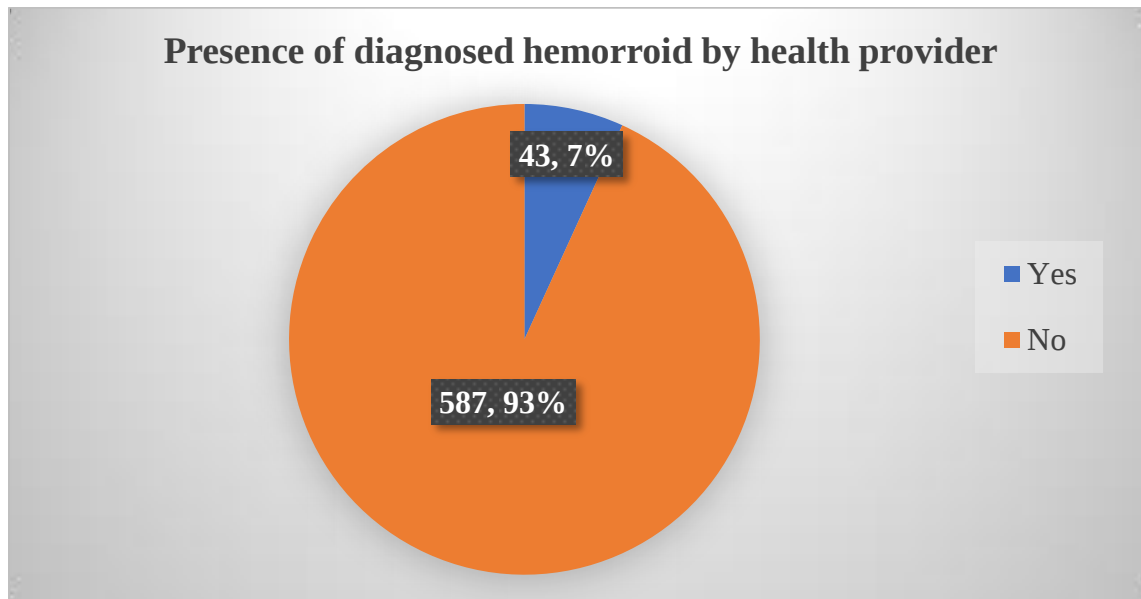


Figure 1. The prevalence of hemorrhoid among the residents of Addis Ababa, Ethiopia, 2024.

5.9 The determinant factors of hemorrhoid among study participants

In this study the strength of association was measured using odd ratio and 95% confidence interval. Accordingly, smoking cigarette, ever drink alcohol, presence of constipation in the past years, ever used traditional treatment and aware of available treatment option for hemorrhoid were an association with hemorrhoid disease by bivariate logistic regression. The multivariate logistic regression revealed that study participant who smoked cigarette were 4.5 folds increase its hemorrhoid diagnosis compared to those of non-smoker (AOR=4.5, 95%CI=1.24, 16.57) and study participants having history of constipation in the past year had 4.7 folds increase its hemorrhoid diagnosis compared to those of its opposite compartment (AOR=4.7, 95%CI=2.35, 9.23).

Study participants who had ever used traditional treatment had 4.8 folds increase its hemorrhoid history compared to those of its opposite compartment (AOR=4.8, 95%CI=1.38, 16.66) and study participant who were aware of available treatment of hemorrhoid had 3.7 folds increase its hemorrhoid history compared to those of its opposite compartment (AOR=3.7, 95%CI=1.74, 7.87).

Table 8. The bivariate and multivariate association between independent variable with hemorrhoid history among the residents of Addis Ababa, Ethiopia, 2024.

Variable	Hemorrhoid		p-value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Smoking cigarette						
Yes	5	14	0.002	5.4(1.84, 15.84)	0.022	4.5(1.24, 16.57)
No	38	573	1		1	
Ever drink alcohol						
Yes	20	185	0.046	1.9(1.01, 3.53)	0.257	1.5(0.75, 2.90)
No	23	402	1		1	
Presence of constipation in the past years						
Yes	22	107	0.000	4.7(2.49, 8.86)	0.000	4.7(2.35, 9.23)
No	21	480	1		1	
Ever used traditional treatment						
Yes	6	10	0.000	9.4(3.23, 27.15)	0.015	4.8(1.36, 16.66)
No	37	577	1		1	
Aware of available treatment for hemorrhoids						
Yes	13	196	0.000	3.9(1.91, 8.17)	0.001	3.7(1.74, 7.87)
No	30	391	1		1	

6 Discussions

Prevalence of hemorrhoids and risk factors

The prevalence of hemorrhoids in this study (6.8%) is lower than global estimates such as 11% in Europe and 16% in Makkah, Saudi Arabia. However, it exceeds the 4.4% observed in a U.S. community-based study, potentially reflecting differences in healthcare access, dietary habits, and cultural perceptions of symptom reporting(12–15) . For instance, studies in Kaduna, Nigeria (32.5%) and Egypt (18%) highlight higher prevalence among occupationally or clinically high-risk groups, suggesting occupational hazards and medical access disparities as significant factors. Locally, our findings are comparable to rates observed in Debre Tabor (7.3%) but lower than Gondar (13.1%), likely due to variations in study settings and participant demographics(16,18–20,23).

Sociodemographic Findings

Middle-aged participants exhibited higher prevalence rates, a pattern that aligns with global findings where individuals aged 45–65 are often most affected(9). For instance, European studies report that middle-to-older age groups bear the greatest burden due to cumulative exposure to risk factors such as constipation and reduced physical activity. However, the lack of significant associations with income and urban residency in our findings contrasts with observations from high-income countries, where sedentary urban lifestyles drive prevalence rates. This discrepancy underscores the influence of local socioeconomic and lifestyle dynamics, as seen in similar Ethiopian studies where rural diets rich in fiber mitigate risk factors.

Lifestyle and Dietary Patterns

Despite 64.3% of participants maintaining a normal BMI, only 36% reported regular consumption of high-fiber foods a key factor in preventing constipation and subsequent hemorrhoids. This dietary inadequacy parallels findings from Gondar, Ethiopia, where dietary habits were similarly poor, emphasizing the role of fiber in mitigating risk. Globally, studies from Europe and North America highlight fiber intake as a cornerstone of prevention, with populations consuming high-fiber diets exhibiting significantly lower hemorrhoid prevalence. Interestingly, smoking, though low in this population (3%), was strongly associated with

hemorrhoid diagnosis (AOR = 4.5). This aligns with studies in Saudi Arabia and Egypt, where even minimal smoking exposure significantly elevated hemorrhoid risk, underscoring its physiological impact on venous integrity(21).

Medical History and healthcare utilization

The prevalence of constipation in 20.5% of participants mirrors findings from Saudi Arabia and Ethiopia's Gondar region, where lifestyle and dietary inadequacies were similarly highlighted as risk factors. However, the underdiagnosis of hemorrhoids (6.8%) despite 9.5% reporting symptoms such as rectal bleeding suggests cultural stigma and limited healthcare engagement. This trend aligns with findings from African studies in Tanzania and Ethiopia, where reluctance to seek care stems from traditional beliefs and a lack of symptom awareness. In contrast, higher rates of diagnosis in developed countries reflect robust healthcare infrastructure and proactive screening practices.

Treatment Preferences and Influences

The overwhelming preference for modern medical treatments (80.3%) signals a shift away from traditional remedies, contrasting with findings from Tanzania (84.7% traditional medicine use) and Addis Ababa's earlier studies where traditional practices dominated(11,25–30). The lower preference for traditional treatments(12.2%) in our study may reflect growing awareness and acceptance of evidence-based medicine(29), while 7.5% preferred a combination of both.

Nevertheless, barriers such as affordability (41.7% found treatment unaffordable) and inconsistent supply availability (24.1% reported shortages) persist. These findings echo global literature, such as studies from low-income regions where healthcare access is undermined by resource constraints despite geographic proximity(31,33).

Determinants of Treatment Choice

Participants with rectal symptoms (AOR = 5.2, 95% CI = 2.06–13.13) or previous hemorrhoid diagnoses (AOR = 21.3, 95% CI = 5.34–84.59) were significantly more likely to choose conservative treatments. This is consistent with findings from European and North American studies, where symptom severity and prior healthcare experiences strongly influence treatment decisions. Similarly, older age groups (particularly those >60 years) exhibited higher conservative treatment preferences (AOR = 10.7, 95% CI = 2.89–39.32), paralleling trends in global research that link age with a preference for less invasive management strategies(6,23,24).

The association between pain and traditional treatment choice (AOR = 2.6, 95% CI = 1.32–5.06) reflects findings from Tanzania and Ethiopia's Wolaita Zone, where acute discomfort drives reliance on traditional remedies. This highlights the need for culturally sensitive education campaigns to encourage modern healthcare utilization while respecting traditional practices.

Global Context and Implications

The findings of this study align with global patterns in hemorrhoid management, where conservative treatments such as dietary modifications and topical medications remain primary recommendations. However, the negligible surgical intervention rate (1%) in this population diverges sharply from global trends, where procedures like hemorrhoidectomy are common for severe cases. This contrast underscores the role of resource limitations and cultural preferences in shaping treatment pathways.

Educational attainment emerged as a pivotal determinant of treatment decisions, with higher education levels correlating with increased utilization of conservative management. This trend mirrors findings from Gondar, Ethiopia, and developed countries, where education drives health literacy and proactive healthcare engagement. Public health campaigns targeting less-educated groups remain essential for addressing disparities in treatment access and outcomes.

7 Conclusion and recommendation

7.1 Conclusion

This study highlights the multifaceted factors influencing hemorrhoid prevalence and treatment preferences among residents of Addis Ababa, Ethiopia. The prevalence of hemorrhoids (6.8%) is relatively low compared to global estimates, yet it underscores significant gaps in awareness, diagnosis, and management. Sociodemographic factors such as middle age and education level emerged as key determinants of hemorrhoid prevalence and treatment choices. While modern medicine is predominantly favored (80.3%), cultural influences and limited affordability continue to shape health-seeking behaviors, with traditional medicine still playing a minor role. Lifestyle factors, including low dietary fiber intake and the presence of constipation, were significant contributors to hemorrhoid risk, and smoking, although uncommon, exhibited a disproportionately strong association with the condition. The findings emphasize the need for integrated healthcare approaches that address these barriers and promote early diagnosis and effective management.

7.2 Recommendations

Strengthen Education and Awareness: Launch community-driven campaigns focusing on dietary habits, physical activity, and early symptom recognition. Collaborate with local health workers to ensure culturally sensitive messaging reaches underprivileged groups.

Integrate Traditional and Modern Treatments: Develop programs that bridge traditional practices with evidence-based medicine, addressing mistrust and improving healthcare utilization. Initiatives like certification of traditional healers could enhance integration.

Expand Healthcare Access: Increase investment in medical supplies, staff, and facilities, particularly in underserved areas. Subsidize hemorrhoid treatments for low-income households to improve affordability.

Encourage Preventive Healthcare: Promote high-fiber diets, physical activity, and smoking cessation through workplace wellness programs, school initiatives, and community workshops.

Conduct Longitudinal Research: Explore causal pathways and evaluate the long-term efficacy of integrated treatment approaches. Investigate sociodemographic factors that may predict treatment adherence and outcomes.

Enhance Policy Frameworks: Advocate for policies that prioritize hemorrhoid prevention and management within national health agendas, ensuring sustainable healthcare delivery.

8 Strengths and Limitations

8.1 Strengths:

- High response rate ensuring data reliability.
- Community based study.
- Comprehensive analysis combining multiple demographic, lifestyle, and clinical variables.

8.2 Limitations:

- Cross-sectional design limits causality inference.
- Self-reported data on symptoms and lifestyle factors may introduce bias.

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Annexes

Annex I: Questionnaire

Interview Number	
Sub city	
House number	

Section 1: Socio-Demographic Information

Question	Response
1. Age	_____
2. Gender	☐ Male ☐ Female
3. Marital Status	☐ Married ☐ Single ☐ Widowed ☐ Divorced
4. Highest Level of Education	☐ No formal education ☐ Primary education ☐ Secondary education ☐ Higher education ☐ Other: _____
5. Monthly Income (ETB)	☐ Less than 1,000 ☐ 1,000-5,000 ☐ 5,001-10,000 ☐ 10,001-30,000 ☐ More than 30,000
6. Religion	☐ Orthodox Christian ☐ Muslim ☐ Protestant Christian ☐ Jehovah's Witness ☐ Other: _____
7. Occupation	☐ Student ☐ Officer ☐ Businessperson ☐ Unemployed ☐ Driver ☐ Farmer ☐ Teacher/Lecturer ☐ Healthcare Provider ☐ Daily Laborer ☐ Housemaid ☐ Other: _____

Section 2: Lifestyle Factors

Question	Response
8. How often do you eat high-fiber foods (vegetables, fruits...)?	☐ Daily ☐ Several times a week ☐ Once a week ☐ Rarely ☐ Never

9. How often do you engage in physical activity (Labor work, sports etc.)?	☐ Daily ☐ Several times a week ☐ Once a week ☐ Rarely ☐ Never
10. Height (cm)	_____
11. Weight (kg)	_____
12. Do you smoke?	☐ Yes ☐ No
13. How often do you consume alcohol?	☐ Daily ☐ Weekly ☐ Monthly ☐ Rarely ☐ Never

Section 3: Medical History

Question	Response
14. Have you had constipation in the past year?	☐ Yes ☐ No
15. Have you ever been pregnant? (For women)	☐ Yes ☐ No ☐ Not applicable
16. Have you ever been diagnosed with anorectal conditions like fistula, abscess, warts, stenosis, incontinence?	☐ Yes ☐ No

Section 4: Hemorrhoid Symptoms

Question	Response
17. Have you had rectal bleeding, pain, itching, or lumps near the anus?	☐ Yes ☐ No
18. What symptoms do you have (choose more than one that apply)?	☐ Pain ☐ Bleeding ☐ Itching ☐ Swelling
19. Have you been diagnosed with hemorrhoids by a healthcare professional?	☐ Yes ☐ No

Section 5: Treatment Choices

Question	Response
20. Have you tried any conservative treatments (choose more than one that apply)?	☐ Dietary changes ☐ Topical treatments ☐ Oral medications ☐ None
21. Have you used traditional treatments?	☐ Yes ☐ No

22. Have you had surgery for hemorrhoids?	☐ Yes ☐ No
If yes, what type of surgery?	☐ Hemorrhoidectomy ☐ Rubber Band Ligation ☐ Other: _____

Section 6: Factors Influencing Treatment Choices

Question	Response
23. Do cultural beliefs influence your treatment choice?	☐ Strong influence ☐ Moderate influence ☐ Little to no influence
24. What type of medicine do you prefer?	☐ Traditional medicine ☐ Modern medicine ☐ Both ☐ Neither
25. How far is the nearest healthcare facility?	☐ Less than 5 km ☐ 5-10 km ☐ 11-20 km ☐ More than 20 km
26. Are medical supplies and staff available at the nearest facility?	☐ Yes ☐ No
27. Do you find hemorrhoid treatments affordable?	☐ Yes ☐ No
28. Do you have health insurance that covers hemorrhoid treatment?	☐ Yes ☐ No
29. Are you aware of available treatment options for hemorrhoids?	☐ Yes ☐ No

Annex-II Information sheet

Greeting: Good morning/afternoon!

Hello. My name is..... I am conducting a study with the aim of assessing the **Prevalence and determinants of treatment choices for Hemorrhoids among the residents of Addis Ababa, Ethiopia**. The information I collect will help to your city and the government at large to plan health services. Now you are randomly selected for the survey. The questions usually take about 15 to 20 minutes.

Objective of the study: To assess Prevalence of Hemorrhoids and its Association Factors in the Choice of Treatment Modalities in Addis Ababa, Ethiopia, Ethiopia 2024.

Benefit of the study: The information you provide will help in understanding the prevalence and treatment choices for hemorrhoids, which can inform public health interventions.

Risk of the study: Participating in this study will not have any risk or harm.

Rights of Participants: You have full right either to Participate or decline participation in this study as participant. You may respond to all the questions or you may not give answer to questions you don't want to and you may end the interview at any time you want. You can ask any question which is not clear for you.

Confidentiality: Any information forwarded will be kept confidential and names will not be written or specified.

Annex III, Informed consent

As to the information given ahead, participating in this study has no any risk. Your name will not be written on this form and the information you give will never be shared to others. You may not answer any questions that you don't want to answer and you may end this interview at any time you want. Now I would like to tell you that you are selected randomly to be participant of the study. Your genuine response to the interviews will be very important for the purpose of the study. At the same time, we would like to appreciate your voluntarily participation in the survey after a thorough understanding of the information given to you.

I have read this form or it has been read to me in the language I comprehend and understand all conditions stated above.

Are you willing to participate in this study?

1- No (say thank you). 2- Yes (continue interviewing)

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Name of interviewer _____ signature _____

Date of interview (Ethiopian calendar) ____/____/____

Result of interview:

1- Completed..... 2- Refused

3- Respondent not available..... 4- Partially completed

Checked by supervisor; Name Signature Date.....