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Review article

Prevalence of Human Hemorrhoid and Overview of Medicinal Plants with Anti-Hemorrhoidal Potential

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Abstract

Hemorrhoidal disease (HD) is a common condition affecting the anorectal area in adults, characterized by elevated pressure and abnormal enlargement of vascular plexuses. Global prevalence rates vary significantly, from 4.4% to 86%. For instance, studies indicate rates of 70% in China, 13% to 36% in the United Kingdom, and 4.4% in the United States, where approximately 10 million individuals experience symptoms. Higher prevalence rates are noted in some countries, such as Australia (38.93%), Israel (16%), and Korea (14.4%). In Cameroon, HD accounts for 40.83% of lower gastrointestinal disorders. Limited research exists on hemorrhoids in Ethiopia, with a study at Ayder Referral Hospital showing an internal hemorrhoid prevalence of 7.5% among colonoscopy cases, and 13.1% reported at the University of Gondar Comprehensive Specialty Hospital. While the exact causes are unknown, risk factors include aging, prolonged straining, and increased intra-abdominal pressure. This study aims to systematically review published articles to investigate the prevalence of hemorrhoids and provide an overview of medicinal plants with anti-hemorrhoidal potential.

Keywords

Hemorrhoids, Medicinal Plants, Prevalence

1. Introduction

The term "hemorrhoid" originates from ancient Greek, where "haema" refers to blood and "rhoos" implies a flow [1]. Hemorrhoids are swollen blood vessels that form cushions inside the anal canal [2, 3]. They are clusters of vascular tissue, smooth muscle, and connective tissue lined by normal epithelial cells of the anal canal, commonly known as anal cushions [24]. Hemorrhoids are a common condition that affects many people worldwide, causing discomfort and impacting their quality of life [4]. According to a study conducted in Addis Ababa, Ethiopia, hemorrhoids were identified as the fourth most frequently treated condition by traditional healers [5]. Hemorrhoids, or hemorrhoidal disease, are frequently regarded as one of the most prevalent gastrointestinal conditions, that affects millions of people in the world [6]. While hemorrhoids themselves are not life-threatening, the physical and emotional distress caused by their symptoms can significantly impact the overall well-being and quality of life for those affected by it [1]. The occurrence of hemorrhoids

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reaches its highest point between the ages of 45 and 65, whereas the emergence of hemorrhoids prior to the age of 20 is uncommon [4]. The pathophysiology of hemorrhoids involves a vascular cushion that consists of arterioles, veins, smooth muscle, elastic tissue, and connective tissue within the sub mucosal space [15]. These components are considered a natural part of the anatomy of the anal canal [7]. Specifically, the anal canal consists of three primary cushions located in the left lateral, right anterior, and right posterior positions [8]. Despite the significant economic impact and distress they impose on society, hemorrhoids continue to receive minimal attention [9, 10]. This study is aims to know the burden or prevalence, epidemiology of hemorrhoids, and medicinal plants for hemorrhoid treatment.

1.1. Prevalence and Epidemiology of Hemorrhoids

Hemorrhoids are thought to affect between 50% to 85% of individuals worldwide. Each year, approximately one million new cases are reported, with prevalence rates ranging from 4.4% to 86% in the general population. A higher occurrence of 36.9% is noted among individuals aged 45-65 [21]. In China, studies indicate that up to 70% of individuals are affected. In the United States, approximately 10 million individuals experience symptoms, with a reported prevalence rate of 4.4%, leading to 3.3 million visits to ambulatory care facilities. In the United Kingdom, prevalence has been reported to range from 13% to 36%. Some countries, such as Australia (38.93%), Israel (16%), and Korea (14.4%), have higher prevalence rates. In Cameroon, hemorrhoidal disease accounts for 40.83% of lower gastrointestinal disorders [16].

The prevalence varies across populations, with the National Centre for Health Statistics reporting 3.82% in the U.S. and 0.36% in India. Hemorrhoids commonly appear in men and women aged 45 to 60 years. In Europe, the prevalence is estimated at 9%–11% and is associated with hormonal shifts during pregnancy [11]. Two French investigations found prevalence rates of 4% and 7% in general practice clinics, while population-based surveys in the USA, Spain, and Japan reported rates of 4%, 13%, and 17%, respectively. In Indonesia, the estimated prevalence stands at 5.7% among 12.5 million people. Hemorrhoids are more common in categories such as postpartum or pregnant women, with prevalence ranging from 12% to 41%.

Limited research has been conducted in Africa. Hemorrhoids are prevalent among individuals in various occupations, including commercial motorcyclists (33.6%) and long vehicle drivers (13.9%). An Egyptian study found that 18% of individuals undergoing colonoscopy had hemorrhoids, while a study at Ayder Referral Hospital revealed an internal hemorrhoid prevalence of 7.5%. At the University of Gondar Comprehensive Specialty Hospital, 13.1% of adult patients visiting the surgical outpatient department had hemorrhoids. Additionally, one-fourth (24.4%) of patients in the obstetric ward of Jimma University Medical Center required nursing care due to constipation caused by hemorrhoids. Overall, the prevalence of hemorrhoids varies according to the study year within the same countries [19].

1.2. Risk Factors of Hemorrhoids and Symptoms

Hemorrhoid disease is associated with various risk factors, including a low-fiber diet, persistent constipation, and the presence of hard or large stools, which increase the likelihood of developing hemorrhoids [13]. Other contributing factors include chronic diarrhea, excessive straining during bowel movements, pregnancy, a sedentary lifestyle, obesity, spinal cord injuries, and skipping bowel movements. Additionally, aging, feelings of depression, consumption of spicy foods and alcohol, engaging in strenuous exercises, prolonged standing, and a family history of the condition can elevate the risk of hemorrhoids [23].

Clinically, hemorrhoids present with differing symptoms based on their type. Internal hemorrhoids primarily manifest as painless rectal bleeding, often identified by small amounts of bright red blood after bowel movements. They may also protrude occasionally. In contrast, thrombosed external hemorrhoids can cause significant discomfort. Common symptoms of internal hemorrhoids include skin irritation, fecal leakage, mucus discharge, and prolapse. External hemorrhoids, located below the dentate line, may not exhibit significant symptoms unless thrombosed, but they are typically painful due to the presence of somatic nerves. The economic impact of hemorrhoids includes increased healthcare costs and decreased productivity in the workforce, exacerbated by frequent misdiagnoses. Social complications can also arise, affecting interpersonal relationships and lifestyle choices.

1.3. Categories of Hemorrhoids

Hemorrhoids are categorized into two main types: internal and external. Internal hemorrhoids are located above the dentate line, while external hemorrhoids are found below it as shown in figure 1. Some classifications also include mixed hemorrhoids, which can develop at the dentate line or involve both internal and external types. The Goligher classification system is widely used to assess the severity of hemorrhoids, although it has limitations. This system categorizes hemorrhoids into four grades [24].

Grade I: Painless bleeding or asymptomatic protrusion of anal mucosa.

Grade II: Painless anal bleeding with protrusion during straining, which reduces spontaneously.

Grade III: Painless anal bleeding with prolapse that requires manual reduction.

Grade IV: Irreducible prolapse, which may be painful or painless, often accompanied by chronic local inflammation.

An alternative system, BPRST (Bleeding, Prolapse, Re-

duction, Skin tag, and Thrombosis), is also gaining acceptance for guiding treatment based on symptoms.

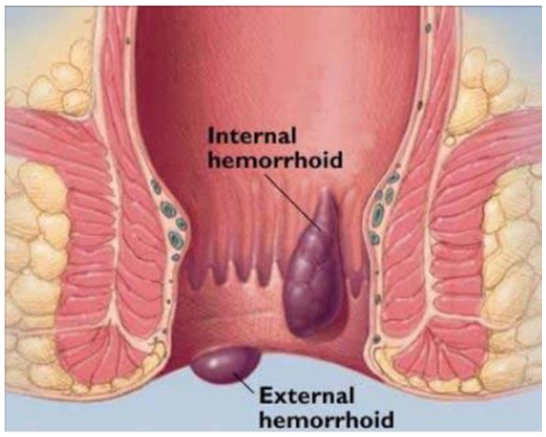

Figure 1. *Anatomy of internal and external hemorrhoids.*

1.4. Overview of Medicinal Plants with Anti-Hemorrhoidal Potential

Traditional medicine, as defined by the World Health Organization (WHO), encompasses culturally specific knowledge and practices aimed at maintaining health and treating illnesses. In modern society, plant-based medicinal products have become a widely accepted form of treatment, with approximately 80% of the global population relying on traditional medicine for healthcare. This reliance is particularly pronounced in developing nations, where financial constraints limit access to Western medicine. Numerous studies in Africa have documented a variety of medicinal plants effective in treating hemorrhoidal conditions. In Ethiopia, 70-80% of the population depends on traditional medicinal plants, with significant research highlighting around 50 species noted for their anti-hemorrhoidal properties.

Medicinal plants contain various phenolic compounds that offer promising alternatives for treating common rectal and anal ailments like hemorrhoids [20]. Research has demonstrated that these herbal remedies can enhance vascular constriction, improve microcirculation, strengthen connective tissues, and promote capillary flow [22]. Notable plants with anti-hemorrhoidal potential include *Aloe barbadensis*, *Trigonella foenum-graecum*, *Nigella sativa*, and *Curcuma longa*, among others [12]. These plants exhibit beneficial effects such as anti-bleeding, analgesic, anti-inflammatory, and wound-healing properties, making them valuable in alleviating hemorrhoid symptoms [15].

Table 1. *Anti hemorrhoidal medicinal plants.*

Family name	Scientific name	Common name	Other role	Reference
Moraceae	*Dorstenia psitomus*	Ginger	Food and abdominal pain	[14]
Zingiberaceae	*Zingiber officinale*		Food and cough	
Euphorbiaceae	*Ephorbia prostata*		abdominal pain	
Acanthaceae	*Acanthus montanus*	Mountain Thistle	Childbirth problem	
Plantaginaceae	*Plantago lanceolata*	Plantain	Wound healing, heamorrhoid treatment, etc.	[15]
Plantaginaceae	*Plantago major*	Broad leaf plantin	Treatment of hemorrhoids, wound healing etc.	[25]
Amaryllidaceae	*Crinum asiaticum*	Spider Lily	Swellings, fever, inflammation, piles, to stop bleeding and to treat	[19]
Asphodelaceae	*Aloe barbadensis*	Aloe vera	laxative, wash for piles, burns, edema, pain, swellings	
Rutaceae	*Murraya koenigii*	Curry Plant	constipation, diarrhea, dysentery, piles, nausea, bloating, etc.	
Punicaceae	*Punica granatum*	Pomegranate	vomiting, eye pain, gastrointestinal disturbances, used to relieve itch, used to treat diarrhea, colitis, dysentery, leucorrhoea, paralysis, to treat piles, etc.	
Oxalidaceae	*Averrhoa carambol*	Carambola	Used to treat chicken pox, ringworm infection, to relieve gastritis, angina, malaria, intestinal worms, diarrhea, and hemorrhoids, etc.	
Euphorbiaceae	*Ricinus communis*	Castor Bean	Headache, skin problems, bleeding, constipation, boils, piles warts, etc.	[21]
Oxalidaceae	*Oxalis corniculata*	Creeping wood-sorrel	Used to treat headache, appetizer, piles, stop bleeding during cut, etc.	

Family name	Scientific name	Common name	Other role	Reference
Aizoaceae	*Trianthema portulacastrum*	Horse purslane	Inflammations, piles, cancer, protective obstruction of the liver triterpenes, anapestic laxative, asthma, etc.	
Solanaceae	*Solanum nigrum*	Black night shade	Used in wounds, cancerous growths, piles, abdominal pain, dysentery	
Cucurbitaceae	*Momordica charantia*	Bitter Gourd	Laxative, piles, pneumonia, abdominal pain, leprosy, etc.	
Amaryllidaceae	*Allium cepa* L.	Amaryllis	Alzheimer's disease treatment, neurological treatment etc.	
Moraceae	*Ficus palmata* Forssk	Natal fig	Hemorrhoids treatment	[5]
Annarcadiaceae	*Mangifera indica* L.	Mango	Antihemorrhoidal treatment	[16]

1.5. Medicinal Plant Remedies and Their Uses

An imbalance between reactive oxygen species and their metabolites leads to an excessive concentration of free radicals [16]. Antioxidants play a crucial role in neutralizing these free radicals, which is essential for managing hemorrhoids effectively [18]. Medicinal plants possess a protective mechanism comprising enzymes such as superoxide dismutase, catalase, and glutathione peroxidase. Additionally, this defense system encompasses non-enzymatic elements such as vitamin E, polyphenols, saponins, alkaloids, mucilage fibers, and anthraquinone [17]. Studies have demonstrated that the consumption of flavonoids reduces both the risk of developing hemorrhoids and the rate of recurrence [10]. Plants like *Cucumis filifolious* (phenols, flavonoids, terpenoids, steroids and saponins) (Figure 2) [22].

Figure 2. *Photos of some antihemorrhoidal medicinal plants.*

2. Methodology

The methodology for this study on the prevalence of human hemorrhoids and the overview of medicinal plants with anti-hemorrhoidal potential involved a systematic review of published articles. Data were gathered exclusively from peer-reviewed journals indexed in databases such as PubMed and Google Scholar. The search criteria included studies published within the last 5 to 6 years that reported on the prevalence rates of hemorrhoids in various populations, with a particular focus on Ethiopia. Additionally, studies documenting the use of medicinal plants in hemorrhoid treatment were included. Information was extracted regarding the prevalence rates, associated risk factors, and the medicinal properties of identified plants. This comprehensive approach enabled a clear synthesis of the prevalence of hemorrhoids and the efficacy of traditional remedies sourced from the reviewed paper.

3. Results

Hemorrhoids are a prevalent condition affecting a significant portion of the global population both in internal and external physiological impacts as shown in figure 1, with

estimates suggesting that between 50% to 85% of individuals may experience this issue at some point in their lives. The highest prevalence rates are observed in individuals aged 45 to 65, showing a demographic particularly impacted by this ailment. Studies indicate annual new cases in the millions, with notable regional variations, such as up to 70% in China and significant occurrences in the United States and the UK. This widespread prevalence underscores the need for increased awareness and effective management strategies. The risk factors associated with hemorrhoids are diverse and include dietary habits, lifestyle choices, and physiological conditions. A low-fiber diet, chronic constipation, pregnancy, and obesity are primary contributors to the development of hemorrhoids. Symptoms vary between internal and external hemorrhoids, with internal types often presenting as painless rectal bleeding, while external hemorrhoids can lead to significant discomfort, especially when thrombosed. The economic implications are considerable, with increased healthcare costs and lost productivity affecting both individuals and the healthcare system.

Traditional medicinal practices offer viable treatments for hemorrhoids, particularly in regions where access to modern healthcare is limited ase medicinal plants listed in Table 1. In Ethiopia, for example, a substantial portion of the population relies on medicinal plants for health care. Research has identified numerous plants with anti-hemorrhoidal properties, such as Aloe barbadensis and Nigella sativa, which possess anti-inflammatory and wound-healing effects [17]. The integration of these herbal remedies into treatment protocols could provide effective relief for symptoms and improve the quality of life for those affected by hemorrhoids.

4. Conclusion

Hemorrhoid disease is the most prevalent anal problem worldwide. In addition it has its own social and economic burden for the concerned body (both for the government and the society themselves). While females are more vulnerable than males by this disease, which possess well magnified risk factors, pathophysiologic conditions, and clinical features and there is no well-known etiology of hemorrhoids. And hemorrhoids can be treated traditionally using medicinal plants which have curing potential with active secondary metabolites like that shown figure 2, and Table 1. A majority of the world population depends on traditional medication for the treatment of disease like hemorrhoids. This review provides the prevalence, epidemiology and the medicinal plants which are involved for its treatment.

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Author Contributions

Tsegasew Munye: Conceptualization
Ayansa Kebenessa: Data curation and Formal Analysis
Emebet Teshome: Formal Analysis
Tegenu Gelana: Writing-original draft and Writing-review and editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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