

Evaluation of the Factors Affecting of Epistaxis: A Study in a Tertiary Care Hospital, Dhaka.

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Abstract

Introduction: Epistaxis refers to the occurrence of bleeding from the nose or nasal cavity. It is widely recognized as one of the most common emergencies encountered in medical settings, particularly in the ear, nose, and throat departments, as well as in accident and emergency departments across the globe. The management of epistaxis depends on the severity of the bleeding and may involve various interventions, including conservative measures like nasal packing, cauterization techniques, or, in more severe cases, surgical interventions. **Objectives:** The primary goal of this study was to investigate the various causes of epistaxis. **Materials and Methods:** This cross-sectional observational study was conducted at the Department of Otolaryngology and Head-Neck Surgery (ENT) in City Medical College & Hospital from May 2021 to April 2023. The study involved 220 patients who presented with epistaxis complaints at the ENT Outpatient Department or Emergency unit of hospital. Diagnosis of the cases was based on their medical history, clinical examination, radiological and laboratory investigations. **Results:** 220 patients were studied during the period. The mean age \pm standard deviation was determined to be 36.67 ± 18.06 years. The age range spanned from 1 to 85 years. Patients less than 25 years old were 124 (56.36%) and more than 25 years old were 96 (43.74%). Males (139) predominated in both indoor and outdoor patients with a male-to-female ratio of 1.7:1. The nasal cavity most involved was left 103 (47%) compared to right 85 (38.6%). Bilateral involvement was seen in 32 (14.4%) cases. Higher incidence was also noticed during winters 93 (42.1%), followed by summer 63 (28.7%), then autumn 38 (17.2%), and least in spring 26 (11.9%). The circadian rhythm was also noted where we found epistaxis to be more during night 82 (37.6%), followed by evening 78 (35.3%), and finally morning 60 (27.1%). Previous history of hypertension (HTN) is seen in 26.3% of cases (58). The history of taking medications with hemorrhagic risk currently or stopped within the last 10 days was 3.5% (8). We also found a relationship between the age group (<25 years, > 25 years) and the type of treatment. **Conclusion:** Epistaxis, or nosebleeds, can be caused by various factors such as trauma, inflammation, tumors, blood disorders, cardiovascular issues, and foreign bodies. Younger individuals are more prone to traumatic causes, while older individuals may experience more severe nosebleeds. Hypertension is a significant contributor, emphasizing the importance of blood pressure management. Understanding these diverse causes is crucial for effective treatment and prevention of potential complications.

Keywords: Epistaxis, modality of treatment, site of bleeding, LAMA.

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Introduction:

The word "Epistaxis" is derived from the Greek term

“Epistazein” which means “to bleed from the nose”. It is a feature of multiple local and systemic disorders. It is estimated that about 60% of the population experiences epistaxis at some point in their lives¹. Though a common presentation and one of the major E.N.T. emergencies, it may prove to be life-threatening if not managed properly. The causes of epistaxis may be focal, local, or systemic. Focal causes pertain to etiologic located focally in the nose. They include trauma to the nose, foreign bodies, rhinoliths, nasal myiasis, chronic granulomatous conditions, and various benign and malignant tumors of the nasal cavity. Epistaxis is one of the most common and most difficult emergencies presenting in 7-14% of the general population each year^{2,3}. Although its lifetime incidence is about 60%, only 6% require formal medical intervention they can be serious and even life-threatening⁴. Most patients who develop epistaxis do not seek medical attention because bleeding is minor and usually stops quickly. However, at other times it could be a full-blown life-threatening major hemorrhage. Approximately 60% of the general population will experience an episode of epistaxis in their lifetime, with causes ranging from idiopathic to cancerous lesions^{5, 6}. Seventy percent of epistaxis cases occur spontaneously⁵. Approximately, 6% of patients presenting with epistaxis ultimately require medical or surgical intervention, and less than 0.2% require hospitalization due to epistaxis^{5, 6}. Most epistaxis (approximately 90%) arises from the Little area along the caudal septum. Blood supply to this area is from the Kiesselbach plexus, which is composed of second-order branches of the internal and external carotid artery systems. Hemorrhage here, commonly referred to as anterior epistaxis, often can be managed conservatively⁵. Epistaxis originating from more posterior aspects of the nasal cavity is referred to as posterior epistaxis. Posterior epistaxis accounts for only 5% to 10% of cases⁷.

Materials and Methods:

This study was a cross-sectional observational study conducted at the Department of ENT-HNS City Medical College & Hospital from May 2021 to April 2023. All the Patients of epistaxis who were admitted or attended the Department of Otolaryngology and Head and Neck Surgery, City Medical College & Hospital, Gazipur, Dhaka during the study period constituted the study population. A purposive sampling technique was used for collecting samples. A total number of 220 patients with epistaxis were included consecutively in this study. After obtaining informed consent from the subject, data was collected. All Patients of epistaxis who will be admitted or attended in the Department of Otolaryngology and Head and Neck Surgery City Medical College & Hospital, Gazipur, Dhaka. Patients who are physically or mentally retarded. Patients were unwilling to comply with the study protocol. Standard, predetermined data collection sheet. Data were processed and analyzed using the computer

software SPSS (Statistical Package for Social Sciences).

Initial clinical examination: Vitals (mainly BP), Presence of nasal Packing, Bleeding Characteristics- Not copious (<250 ml), Copious bleeding (>250 ml), Discontinuous bleeding <6 hrs, Discontinuous bleeding >6 hrs. Initial treatment initial maneuvers- head forward, blowing of the nose, suction of clot, use of vasoconstrictor.

Study procedure: This study obtained clearance from the institutional review committee of the hospital. Patients were provided with verbal information by the attending specialist on call and were given written materials explaining the study. Following patient resuscitation, a comprehensive process was carried out, including detailed history taking, thorough general examination, systemic examination, and specific examination of the nose, throat, and ears, with a focus on identifying the bleeding site. Relevant blood tests and radiological investigations were conducted and the data was collected using a structured form designed for this purpose.

Statistical analysis: Statistical analysis was performed using SPSS 21.0. Initially, the variables were summarized as descriptive data. Subsequently, an exploratory analysis was conducted to identify potential risk factors that may influence the occurrence of epistaxis failures. During this process, variables related to patients' previous medical history, history of epistaxis, bleeding characteristics, and the progression and final outcome of the condition were compiled and assessed for independence using the chi-square test.

Result:

Table-I: Characteristics of the study population (n=220)

Age in years	Frequency	Percentages
5-15	72	32.73
16-25	52	23.64
26-35	28	12.73
36-45	22	10.00
46-55	20	9.09
56-65	16	7.27
≥65	10	4.55

The table above represents the distribution of 220 participants in a study investigating the factors influencing the etiology of epistaxis and its treatment. The highest frequency was observed in the 5-15 age group, accounting for 32.73% of the sample, followed by the 16-25 age group with 23.64%. As age increased, the number of participants gradually decreased, with the older age groups, including 56-65 and ≥65, having lower frequencies of 7.27% and 4.55%, respectively.

Table-II: Demographic characteristics of the study population and their clinical profiles.

Patient included	Frequency (n= 220)	Percentage (%)
Age		
<25 years	124	56.36
>25 years	96	43.74

Patient included	Frequency (n= 220)	Percentage (%)
Gender		
Male	139	63.00
Female	81	37.00
Site of involvement		
Left	103	47.00
Right	85	38.6
Bilateral	32	14.4
Circadian rhythm		
Morning	60	27.1
Evening	78	35.3
Night	82	37.6
Season		
Summer	63	28.7
Autumn	38	17.2
Winter	93	42.1
Spring	26	11.9
Previous history		
HTN	58	26.3
Medications with a hemorrhagic risk currently or stopped within the last 10 days	8	3.5
Epistaxis in Prev. 6 months	5	2.05

Table II summarizes the demographic characteristics and clinical profiles of the study population investigating factors related to epistaxis. The study included 220 patients, with a majority (56.36%) being under 25 years old. The gender distribution was 63.00% male and 37.00% female. Epistaxis was predominantly reported on the left side (47.00%), followed by the right side (38.6%) and bilateral involvement (14.4%). The incidents occurred during various times of the day, with 27.1% in the morning, 35.3% in the evening, and 37.6% at night. In terms of seasons, winter had the highest frequency (42.1%), followed by summer (28.7%), autumn (17.2%), and spring (11.9%). A history of hypertension (HTN) was observed in 26.3% of patients. Only a small percentage (3.5%) had medications with hemorrhagic risk or recently stopped such medications. Previous epistaxis occurrences within the last six months were reported by 2.05% of participants.

Table III: Causes of epistaxis of population

Causes	Frequency (n=220)	Percentage
Idopathic	68	30.91
Trauma (injury + surgery)	44	20
Inflammatory diseases (chronic rhinosinusitis)	35	15.91
Foreign bodies (living / nonliving)	31	14.09
Tumors(benign/malignant)	19	8.63
Blood dyscrasia (including liver diseases)	15	6.81
Cardiovascular related (Hypertension +atherosclerosis)	8	3.63

Table-III presents the causes of epistaxis within a population. The data reveals that idiopathic cases, with no identifiable cause, account for the highest frequency at 68 cases (30.91%). Trauma, including injury and surgery, follows closely with 44 cases (20%), while inflammatory diseases contribute to 35 cases (15.91%). Foreign bodies are responsible for 31 cases (14.09%), and tumors, both benign and malignant, contribute to 19 cases (8.63%). Blood dyscrasia, including liver diseases, accounts for 15 cases (6.81%), while cardiovascular-related factors, such as hypertension and atherosclerosis, are associated with the lowest frequency at 8 cases (3.63%).

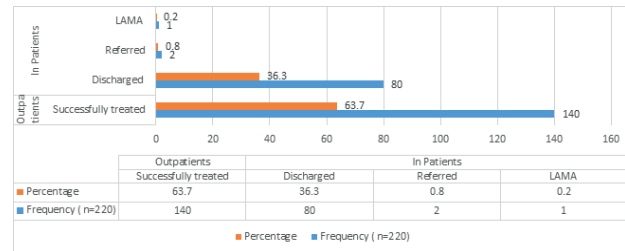


Fig: 1: Outcome of the study

In the study 83 (37.3%) patients were admitted whereas 140 (62.6%) were treated on an outpatient basis. Among the outpatients, there was a 100 % success rate and sent home the same day. Among the admitted patients, 80 (97.2%) were discharged after successful treatment whereas 3 (2.8%) cases were not. One patient with a biopsy report of squamous cell carcinoma from the nasal mass was referred to a cancer hospital for chemo-radiotherapy. Four were referred to other departments. Three were referred to the internal medicine department for pleural effusion, cardiac failure with corpulmonary, and alcoholic liver disease. 1 patient Left against medical advice (LAMA) during the admission. (Fig: 1).

Table-IV: Statistical significance of the study

	Treatment		P-Value
	Non-Surgical	Surgical	
Age group			0.101
Less than 25	144	23	
More than or equal to 25	40	13	
Hypertension			0.101
Yes	47	0	
No	137	0	

Table IV presents the statistical significance of the study, examining the relationship between treatment, age group, and hypertension. For the age group "Less than 25," there were 144 cases treated non-surgically and 23 cases treated surgically, resulting in a p-value of 0.101, indicating no significant difference. Among individuals with hypertension, 47 cases were treated non-surgically and none surgically, yielding a highly significant p-value of 0.001.

Discussion:

220 patients taken in the study were the patients that came to the department of ENT of City Medical College & Hospital with epistaxis during the study period. More

patients were <25 years, > 25 years. The low age incidence in our study may be due to the fact that the majority of our patients who had traumatic epistaxis 33% tended to be younger than those with atraumatic epistaxis. Young people are the most active in the population and so vulnerable to trauma from nose picking especially among children and also fights, and road traffic accidents causing epistaxis. The assumption that older individuals, who have lost the elastic and contractile properties of their arteries, are prone to more severe nosebleeds than younger individuals and require hospitalization and aggressive management^{8,9}; is confirmed in our sample of patients. Aged <25 were 124 (56.36%), and >25 were 95 (43.74%) were divided so to Fork a difference between the elderly and younger generation. For this project, we have used 25 years of age and older as the general definition of an older person depending on the setting, the region, and the country¹⁰. Male predominance like in our study has been reported in the literature¹¹. Unilateral involvement with left-sided predominance is seen in the study by Urvasi R et. al.¹². 86% have anterior bleeding in a study by Iseh. KR¹³ Klossek¹⁴ and Hussain G¹⁵ all lead to the same pattern throughout the world favoring anterior bleeding. An increased incidence of epistaxis in winter was seen in our study which is in agreement with Wormald PJ, Varshney S, Petruson B, Purkey MR^{11, 16} and it may be attributed to high wind velocity and dryness which favor crust formation in the nasal cavity. Epistaxis seen more in the night followed by evening and finally by morning in our study does not correspond completely with the study by Roberto Manfredini et al.¹⁷. Trauma in our study population varied from minor self-inflicted Injuries such as digital trauma to severe degrees of maxillofacial trauma due to accidents. The nose being the most prominent part of the face is most susceptible to craniofacial injury. Most of the patients were victims of RTA and had nasal bone fractures along with other maxillofacial injuries. This is also in accordance with a study by Urvasi Razdan et al.¹² where trauma was the most common case for outdoor patients. HTN (hypertension) is one of the major causes of epistaxis (27.3%) and we also identified an association between blood pressure levels and the presence of enlarged blood vessels in the nasal mucosa (seen during rhinoscopy or endoscopy). It may be possible that the enlarged aspect of the vessel may represent some degree of degeneration of the blood vessel walls, making them prone to bleeding as suggested by Neto JFL⁸. In India was recorded HTN as the second most common cause of epistaxis followed by idiopathic causes and also a study by Charles R in Bristol General Hospital¹⁸. So this study also emphasizes regular blood pressure checks and compliance with antihypertensive medications. Inflammatory causes like rhino sinusitis or different causes of rhinitis as a cause of epistaxis were seen in 12.9% of causes. After the acute bleeding episode was stopped, required medications were also prescribed for rhino sinusitis or other inflammatory processes¹⁹. Foreign bodies accounted for (18 cases) 8.2 % of total patients were

also causes of unilateral epistaxis especially in children. The foreign bodies that were found were of different kinds both living and nonliving.

Limitation of the study:

The present study was limited in some aspects like the unavailability of chemo-radiotherapy in the same site of treatment. It is also a single institute-based analysis; the corresponding author is the investigator of the study, so some biases cannot be ruled out.

Conclusions:

In our setting, trauma, whether self-inflicted, iatrogenic, or due to accidents, remains the primary cause of epistaxis. The majority of cases were managed in the outpatient department using non-surgical methods, while some required admission for surgical intervention.

Conflict of Interest: None.

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References:

1. Varshney S, Saxena RK. Epistaxis: A Retrospective Clinical Study. *Indian J Otolaryngol. & Head & Neck Surg.* 2005 Apr-Jun; 57(2):125-129.
<https://doi.org/10.1007/BF02907666>
PMid:23120148 PMCID:PMC3450961
2. Wormald PJ. Epistaxis. *Byron and Bailey's Head and Neck Surgery Otolaryngology.* 4th ed. Philadelphia: Lippincott Williams and Wilkins;2006.p.505-14.
3. McGarry. Epistaxis. *Scott-Brown's otorhinolaryngology, Head and Neck surgery.* 7th ed. London: Edward Arnold Publishers; 2008.p.1596-1608.
<https://doi.org/10.1201/b15118-141>
4. Tami AT, Merrel JA. Epistaxis. *Ballenger's Otorhinolaryngology.* Centennial ed. Connecticut: BC Decker; 2009.p.551-55.
5. Jindal G, Gemmete J, Gandhi D. Interventional neuroradiology applications in otolaryngology, head and neck surgery. *Otolaryngol Clin North Am.* 2012;45(6):1423-1449.
<https://doi.org/10.1016/j.otc.2012.08.010>
PMid:23153756
6. Christensen NP, Smith DS, Barnwell SL, Wax MK. Arterial embolization in the management of posterior epistaxis. *Otolaryngol Head Neck Surg.* 2005;133(5):748-753.
<https://doi.org/10.1016/j.otohns.2005.07.041>
PMid:16274804
7. Cullen MM, Tami TA. Comparison of internal maxillary artery ligation versus embolization for refractory posterior epistaxis. *Otolaryngol Head Neck Surg.* 1998;118(5):636-642.
[https://doi.org/10.1016/S0194-5998\(98\)70233-5](https://doi.org/10.1016/S0194-5998(98)70233-5)

<https://doi.org/10.1177/019459989811800512>

PMid:9591862

8. Neto JFL, Fuchs FD, Facco SR, Gus M, Fasolo L, mafesoni R, et al. Is Epistaxis Evidence of End Organ damage In patients with Hypertension. *The Laryngoscope*. 2009; (109): 1111-15.

<https://doi.org/10.1097/00005537-199907000-00019>

PMid:10401851

9. Page C, Biet A, Liabeuf S, Strunski V, Fournier A. Serious spontaneous epistaxis and hypertension in hospitalized patients. *Eur Arch Otorhinolaryngol*. 2011;268(12):1749-53.

<https://doi.org/10.1007/s00405-011-1659-y>

PMid:21656167

10. World Health Organization (WHO). Information Needs for Research, Policy and Action on Ageing and Older Adults. Zimbabwe, 2000.

11. Petruson B. Epistaxis: a clinical study with special reference to fibrinolysis. *Acta Otolaryngol*. 1974;317(suppl):1-73.

<https://doi.org/10.3109/00016487409129566>

PMid:4528551

12. Urvashi R, Raizada RM, Chaturvedi VN. Epistaxis: study of etiology, site and side of bleeding. *Indian journal of Medical Sciences*. 1999; 53 (12):545-52.

13. Isch KR, Muhammad Z. Pattern of epistaxis in Sokoto, Nigeria: A review of 72 cases, *ann Afr Med*. 2008; 7(3):

107-11.

<https://doi.org/10.4103/1596-3519.55668>

PMid:19253519

14. Klossek JM, Dufour X, et al. Epistaxis and its management: an observational pilot study carried out in 23 hospital centres in France. *Rhinology*. 2006;44:151-5.

15. Hussain G, Iqbal M, Shah SA, Said Mohammad. Evaluation of Aetiology and efficacy of management protocol of epistaxis. *J Ayub Med Coll Abbottabad*. 2006;18(4):62-5.

16. Purkey MR, Seebkin Z, Chandra R. Seasonal Variation and predictors of epistaxis. *Laryngoscope*. 2014; (9): 124.

<https://doi.org/10.1002/lary.24679>

PMid:24633839

17. Manfredini R, Portaluppi F, Salmi R, Martini A, Gallerani M. Circadian variation in onset of epistaxis: analysis of hospital admissions. *BMJ*. 2000;321(7269):1112.

<https://doi.org/10.1136/bmj.321.7269.1112>

PMid:11061731 PMCID:PMC27518

18. Charles R, Corrigan E. Epistaxis and hypertension. *Postgraduate Medical Journal*. 1977;(53):260-61.

<https://doi.org/10.1136/pgmj.53.619.260>

PMid:876933 PMCID:PMC2496568

19. Gifford T.O., Orlandi R.R. Epistaxis. *Otolaryngologic clinics of North America*. 2008; (41):525-536.

<https://doi.org/10.1016/j.otc.2008.01.003>

PMid:18435996