




Teacher's Competence in First-Aid Management of Epistaxis in Schools

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Abstract

Introduction: Epistaxis is commonly referred to as nosebleeds. The age range in which it most frequently manifests itself is three to eight years old. One of the primary settings for pediatric epistaxis is schools since kids can get accidental injuries while playing. The security and welfare of the pupils in school are the teacher's concerns. So, the teachers must be aware of the correct basic first-aid protocols. This study aims to assess the awareness of handling of epistaxis first aid in schools. **Methodology:** The study participant's responses were gathered using a pre-tested semi-structured questionnaire. **Statistical analysis** was done and the significance of the results was assessed. **Results & Conclusion:** The majority of participants felt confident when it came to managing epistaxis, despite the fact that they had not received any formal training and simply possessed only an average understanding of the subject, lacking detailed insights and intricacies related to its first aid treatment. This underscores the fact that they were overestimating their knowledge and expertise in this domain. Therefore, educators, who are typically the initial responders to pediatric epistaxis in schools, have a limited or inadequate understanding and familiarity with the appropriate first aid protocols. Further studies scaling larger populations and propagating awareness in institutes related to children especially through means of live demonstrations and workshops can advance first aid management during emergencies.

Keywords Epistaxis · Children · School Teachers · Awareness · First aid

Introduction

Epistaxis, commonly referred to as nosebleeds, can be caused by many variables, including environmental, local, systemic, and medication-related ones. These factors might harm the nasal mucosa, impact the vessel walls, or change the blood's coagulability. While it is rare in infants and young children, it is prevalent in both children and young adults. A frequent appearance in the emergency department is epistaxis. Based on the location of epistaxis, it can be classified as either anterior or posterior. Most of the nose bleeds

are anterior in nature originating from the little's area. The age range in which it most frequently manifests itself is three to eight years old. Both systemic and local reasons can result in nasal bleeding; the former includes coagulopathy, anticoagulant use, and blood disorders. and the local factors include upper airway infections, trauma, septal perforations, allergies, and foreign body ingestion into the nasal cavity.

One of the primary settings for pediatric epistaxis is schools since kids can get accidental injuries while playing. The security and welfare of the pupils in school are the teacher's concerns. Simple solutions like tilting the head forward and applying digital compression to the nose can effectively manage it in schools. To treat epistaxis quickly and effectively, school teachers must be aware of correct first-aid protocols. However, teachers, who are typically the initial responders to pediatric nosebleeds in schools, have a restricted or insufficient understanding and familiarity with the correct first-aid protocols. Studies suggest that various factors can impact a teacher's level of first-aid knowledge, such as age, educational background, teaching experience, and exposure to first-aid training.

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Materials and Methodology

The study was performed at the department of otorhinolaryngology after getting approved by the Institutional ethical committee. This cross-sectional study was performed with the help of questionnaires filled by 113 teachers from the same school.

Inclusion criteria

- 1) Teachers of primary, middle, high, and higher secondary school.

Exclusion Criteria NIL.

Procedure

The study participants' responses were gathered using a pre-tested semi-structured questionnaire. The questionnaire consisted of three parts:

- 1] Basic demographic characteristics of the study participants.
- 2] Knowledge regarding the management of epistaxis.
- 3] Practices and skills in the management of epistaxis.

Based on the importance of the responses on the grounds of literature review, a weighted score was assigned to each answer of questions mentioned in Table 1 which was then summed for each participant. The minimum and maximum values possible were 0 and 20. The median value was calculated (12), out of which the ROC curve was constructed showing 93% sensitivity and 88% specificity with AUC (Area Under Curve) 0.83. The score obtained was then used to stratify the respondents as having adequate or inadequate knowledge in the management of epistaxis.

Table 1 Basic demographic characteristics of the study participants, ($n = 113$)

S.No	Characteristics	<i>n</i>	%
1.	Age		
	<25	4	3.5
	25–35	36	31.9
	36–45	57	50.4
	>45	16	14.2
2.	Gender		
	Male	13	11.5
	Female	100	88.5
3.	Teaching grade		
	Primary school	29	25.7
	Middle school	46	40.7
	High school	38	33.6

Statistical Analysis

Each right response on the knowledge and awareness items was worth one point, and the sum of the discrete scores for each item was determined. A teacher was classified as having poor awareness if their score was less than 60% (0–4 points) of the total, and as having good awareness if their score was 60% or higher (5 points or more). Data collected were entered in a microsoft excel spreadsheet and statistical analysis was done in Statistical Package for Social sciences version 21. Numerical and nominal data collected were tabulated as percentage and frequency respectively.

A descriptive analysis was conducted using frequency and percent distribution for all the variables, which included the socio-demographic characteristics of the teachers, their prior knowledge of epistaxis first aid, and their experience of dealing with male and female pupils who had nosebleeds. Additionally, frequency tables showed the participants' knowledge of first aid for epistaxis and what they would do if they came across a kid who had the condition.

The distribution of instructor's knowledge of epistaxis first aid based on their personal information, medical history, and knowledge of the technique was evaluated using cross-tabulation.

The frequency and percentage of both nominal and ordinal data were tabulated. Chi-square test and Fischer's exact test were used to test the association between study characteristics and knowledge in the management of nosebleed. P value < 0.05 was considered significant.

Results

The mean age of teachers included in the study was 35.62 years. Almost 88% of the study participants were female. The majority of them belonged to middle school ($n = 46$, 40.7%) and 33.6% ($n = 38$) of them were teachers of high school (Table 2).

Around 65.5% ($n = 74$) of them admitted that they had adequate knowledge of the management of epistaxis. Nearly 46% of them knew that compression could be applied to stop nose-bleeds. Eighteen of them (15.9%) chose to apply compression for 11 to 20 min to stop bleeding. About 57.5% ($n = 65$) of them opined that tissue or gauze should not be used to pinch the nose in such instances. Only about 13.3% ($n = 15$) of them knew the right position of the head during a bleed and only 70 participants knew that ice can be applied during a bleed (Table 1).

Nearly 38 (33.6%) of them had encountered instances of epistaxis. The majority had not undergone any training in the management of epistaxis. Most of them felt somewhat confident ($n = 63$, 55.8%) in handling epistaxis. Moreover,

Table 2 Knowledge regarding the management of epistaxis, ($n = 113$)

S.No	Knowledge in the management of Epistaxis	<i>n</i>	%	Correct Ans
1.	Knowledge of common causes of nosebleeds			N/A
	Adequate	74	65.5	
	Inadequate	39	34.5	
2.	Methods to stop nasal bleed			A
	Compression of the nose	52	46	
	I'm not sure	23	20.4	
	No need to apply pressure	38	33.6	
3.	The area of the nose compressed to stop nosebleeds			B
	Below the nose	34	30.1	
	On top of the nose	79	69.9	
4.	Duration required to pinch the nose to stop a nosebleed			A
	11–20 min	18	15.9	
	6–10 min	8	7.1	
	2–5 min	56	49.6	
	Less than 2 min	31	27.4	
5.	Tissue or gauze can be used to cover the nose			A
	Yes	48	42.5	
	No	65	57.5	
6.	Position of the head during a bleed			A
	Forward-tilt	15	13.3	
	Backward-tilt	98	86.7	
7.	Ice can be topically applied on the nose during nose bleed			A
	Yes	70	61.9	
	No	43	38.1	
8.	Need to seek emergency care in nose bleed			B
	> 10 min	74	65.5	
	> 30 min	33	29.2	
	> 60 min	6	5.3	

Table 3 Practices and skills in Management of Epistaxis, ($n = 113$)

S.No	Practice and skills in the management of epistaxis	<i>n</i>	%
1.	Have you encountered any instances of nosebleeds among your students?		
	Yes	38	33.6
	No	75	66.4
2.	Have you received any training on first-aid management of nosebleeds?		
	Yes	24	21.2
	No	89	78.8
3.	Ability to handle nosebleed		
	Very confident	24	21.2
	Confident	16	14.2
	Somewhat confident	63	55.8
	Not confident at all	10	8.8
4.	Need for training regarding management of nosebleed		
	Yes	98	86.7
	No	15	13.3

86.7% of them were willing to attend training for the management of nose bleeds. (Table 3)

Variables like age and gender did not show any association with knowledge in the management of nosebleeds on applying Fischer's exact test (Table 4). The association with teaching grade was found to be statistically significant with chi-square value of 9.234 and P value of 0.010.

Discussion

Epistaxis is one of the most common crises worldwide. Ten to twelve% of people are affected, and 10% require specialized medical care [1]. Although there are anterior and posterior origins of epistaxis, Kiesselbach's plexus, which is also called as Little's area, on the anterior portion of the

Table 4 Association between teacher's profile and knowledge in the management of epistaxis, ($n = 113$)

S.No	Characteristics	Adequate knowl- edge, $n = 73$	Inadequate knowl- edge, $n = 40$	Chi- square test	<i>P</i> value
1.	Age				
	<25	3 (4.11)	1 (2.5)	3.510	0.319
	25–35	19 (26.02)	17 (42.5)		
	36–45	39 (53.43)	18 (45)		
	>45	12 (16.44)	4 (10)		
2.	Gender				
	Male	11 (15.1)	2 (5)	2.573	0.109
	Female	62 (84.9)	38 (95)		
3.	Teaching grade				
	Primary school	12 (16.44)	17 (42.5)	9.234	0.010
	Middle school	33 (45.2)	13 (32.5)		
	High school	28 (38.36)	10 (25)		

nasal septum is the reason for about 90% of nosebleeds [2]. While certain cases of epistaxis require medical attention and hospitalization, the majority of incidents are benign, self-restraining, and manageable with fundamental first-aid techniques like basic compression of the nose [3]. Understanding, cognizance, and knowledge are necessary to manage epistaxis.

Despite the high frequency of epistaxis, many people are unfamiliar with the first aid measures required to manage acute epistaxis in the absence of hospital facilities [4, 5]. School children are usually hyperactive and hence are more susceptible to trauma, accidents, and other conditions that could raise their risk of bleeding episodes, such as epistaxis. This highlights how important it is for educators to be highly knowledgeable about first aid techniques in order to manage students' symptoms during the immediate period of an episode until outside medical assistance is obtained [6, 7].

The purpose of the current study was to assess teachers' awareness of epistaxis. The average age of teachers participating in the study was 35.62 years. The study found that about 88% of the participants were female. 40.7% of the participants were middle school teachers, whereas 33.6% were high school teachers (Table 2). The study found that a majority of participants (65.5%) believed they possessed adequate knowledge regarding the management of epistaxis (Table 1). Approximately 46% of the participants were aware that compression could be applied to halt a nosebleed and the majority of participants (61.9%) knew that ice can be applied during a nosebleed (Table 1). Thus, a significant portion of participants (55.8%) expressed a moderate level of confidence ("somewhat confident") in their ability to handle cases of epistaxis (Table 3).

However, only a small percentage of participants chose to apply compression for 11 to 20 min to stop bleeding and

knew the correct position of the head during a bleed (15.9% and 13.3% respectively). Out of the total number of participants, 38 teachers (33.6%) had encountered instances of epistaxis previously. The majority had not undergone any training in the management of epistaxis. Thus most participants expressed confidence in managing epistaxis, despite lacking formal training and having only a basic awareness of the condition. They did not possess detailed insights and complexities of its first aid treatment. This highlights the fact that they were overestimating their knowledge and expertise in this particular domain.

86.7% of them were willing to attend training regarding the management of epistaxis as per the survey (Table 3). According to the poll, 86.7% of the participants expressed their willingness to participate in training on the management of epistaxis. Therefore, their willingness to acquire knowledge about the first aid management of this condition is a favorable indication that there is potential for medical education to enhance awareness levels.

The association with teaching grades was found to be statistically significant (Table 4), thus, teachers from higher grades possessed greater insight compared to their colleagues in lower grades, possibly because they tend to have a stronger foundation of information and therefore more awareness.

Some of the current study's findings were in agreement with the findings of the study on teachers' awareness regarding epistaxis by Alasiri et al., in the aseer region, Saudi Arabia which revealed less than one-fifth (15.5%) of the teachers in the research had a high level of awareness of first aid for epistaxis, 74.9% recognized nasal compression must be used but only 11.9% of them were aware that the compression should be applied for a minimum of ten minutes and only 27.4% were aware that compression is necessary below the nose [8].

There is a similar study that evaluated first aid knowledge and attitudes of Turkish primary school teachers by Başer M et al. which determined that majority of teachers did not have correct knowledge and attitudes about first aid [9]. It was found that as the age of the teachers increases, appropriate first-aid practice becomes more and more unlikely.

Another study regarding the awareness of epistaxis and its first aid management among teachers working in schools of al-baha region, Saudi Arabia by Alzahrani SA et al., revealed that 50.7% had received training regarding epistaxis, while 49.3% had never been trained. The study also revealed 73.3% teachers knew applying nasal compression may help stop bleeding, while the rest were completely unaware and similar to our study, there was no association between age, gender and the management of epistaxis, but teachers from a scientific background, as compared to those

from a literature background, were able to answer better regarding the management of epistaxis [10].

It is clear that although the teachers knew certain aspects of dealing with epistaxis, they didn't know enough about the techniques, particularly the location and length of the nasal compression. This implies that although the teachers showed strong awareness of specific facts, but their overall knowledge of first-aid measures was inadequate.

Additionally, teachers who had previously learned about first aid techniques showed noticeably increased awareness. However, their expertise was still insufficient to fully handle a child with a nosebleed. Additional research is required, however, as stated already teachers of higher grades had a greater awareness of epistaxis first aid, likely due to their possession of a more extensive knowledge base. This indicates that increasing the dissemination of information will likely result in better levels of knowledge and practices.

Health education was given to the teachers on the basic anatomy of the nose, first aid management of epistaxis including the head position, duration required to pinch the nose to stop a nosebleed, various methods to stop nasal bleeding, and when to seek emergency care in case of nose bleeds. Further inculcation of information through live demonstrations or workshops of first aid techniques, along with frequent practice drills, will dramatically improve understanding and responses to first aid situations, resulting in more effective management of episodes of epistaxis.

Conclusion

Approximately two-thirds of the teachers in the current study were familiar with the fundamentals of epistaxis and had an average knowledge of how to manage it. But majority of the participants had not taken any courses or received any training on the subject, which is evident from their lack of knowledge regarding the duration and technique of nasal compression. Variables like age and gender did not show any association with level of knowledge in the management of epistaxis however teachers from higher grades had a better level of expertise. It was discovered that teachers who had prior expertise and had undergone training demonstrated higher levels of awareness. Further training is required to enhance the collective understanding of fundamental emergency care, such as the management of epistaxis, particularly among educators. This can be achieved by utilizing various media platforms, capitalizing on the advantages that arise from the increasing prevalence of social media, and incorporating fundamental emergency

management principles into the educational curriculum for students. Conducting additional research on broader populations and promoting awareness in educational institutions focused on children especially with live workshops can enhance the effectiveness of first aid response in emergency situations.

Declarations

Ethics Approval As per university standards written ethical approval has been collected and preserved by the author(s).

Consent As per university standards, Participants' written consent has been collected and preserved by the author(s).

Competing Interests The authors have declared that no competing interests exist.

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