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Teacher's awareness regarding epistaxis first-aid management inside schools in Asser Region, Saudi Arabia

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Abstract

Background: Epistaxis is defined as bleeding that originates from the nasal cavity. Considered as one of the most common ENT emergencies, epistaxis is estimated to account for 0.5% of all emergency department visits and up to one-third of all otolaryngology-related emergency department encounters. Nasal bleeding is the most common ENT emergency in the USA. According to the site of bleeding, it can be divided into anterior or posterior. The prevalence of epistaxis was noted to be 35.5% among the children of the participants in a survey conducted in Saudi Arabia in 2019. A cross-sectional study done in Saudi Arabia found that 27% of the participants experienced nasal bleeding. However, the Saudi population's knowledge about emergency epistaxis management is inadequate. Increased awareness and education about first aid management of epistaxis can improve knowledge and recall among the general population. On the other hand, a study conducted in 2020 showed good knowledge among the Saudi Arabian population about epistaxis management. In most of the cases, epistaxis occurs in an out-of-the-hospital setting. Thus, it is very important for the general population to understand and know some first aid measures for epistaxis.

Objective: To assess the level of awareness regarding epistaxis first aid management at schools in Aseer Region, Saudi Arabia.

Results: A total of 75.9% of the teachers in this study correctly reported that they would apply nasal compression in case of a nosebleed. When asked how they would try to stop the bleeding, 58.1% reported that they would keep the head tilted forward and 55.8% stated that they could put ice on the head or nose. Overall, 53.7% knew that they should go to the emergency in case the nosebleed continued for more than 10 min. Only 49.5% reported that they would block the nose with tissue or gauze, and 11.9% knew the compression time to be 6–10 min. A total of 61(15.5%) teachers in this study had good awareness regarding the first aid of epistaxis, while 333 (84.5%) had poor awareness levels.

Conclusion: Nearly two thirds of the teachers were knowledgeable regarding epistaxis and its management, despite the fact that less than half of them had not attended any training or courses in related areas. The lowest awareness was regarding the method and duration of nasal compression. Higher awareness was observed among young male teachers, those teaching scientific subjects, and those who had received information.

Keywords: Awareness, Epistaxis, First aid

Background

Epistaxis is defined as bleeding that originates from the nasal cavity. Considered as one of the most common ENT emergencies, epistaxis is estimated to account for

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0.5% of all emergency department visits and up to one-third of all otolaryngology-related emergency department encounters [1]. Nasal bleeding is the most common ENT emergency in the USA [2]. According to the site of bleeding, it can be divided into anterior or posterior [3].

The prevalence of epistaxis was found to be 35.5% among the children of the participants in a survey conducted in Saudi Arabia in 2019 [2]. A cross-sectional study done in Saudi Arabia noted that 27% of the participants experienced nasal bleeding [3].

The Saudi population's knowledge about emergency epistaxis management is inadequate. Increased awareness and education about first aid management of epistaxis can improve knowledge and recall among the general population [4]. On the other hand, a study conducted in 2020 showed good knowledge among the Saudi population about epistaxis management [5].

In most of the cases, epistaxis occurs in an out-of-the-hospital setting. Thus, it is very important for the general population to understand and know some first aid measures for epistaxis [6].

Risk factors for epistaxis in children include nose picking, trauma, nasopharyngeal mass, bacterial nasal colonization, and allergic rhinitis [7].

Methods

This cross-sectional study was conducted in September 2020 through a well-structured online questionnaire filled by teachers in Aseer Region, Saudi Arabia.

Study design and setting

This observational, cross-sectional study was conducted among male and female teachers in Aseer region, Saudi Arabia, during September 2020. All data were obtained using an electronic questionnaire, which was distributed to the participants after they received a complete explanation of the purpose of this study.

Participants and data collection

A total of 382 teachers, of both the sexes, responded to the questionnaire. The questionnaire was adapted from a previous study [8], which considered the demographic data of the respondents (i.e., age, nationality, sex, and place of residence). Additional nine questions related to the assessment of epistaxis management knowledge were also included in the questionnaire.

Data analysis

After data extraction, it was revised, coded, and fed to the statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All the statistical analyses were done using two-tailed tests. *P* value less than 0.05 was statistically significant. For knowledge and awareness items, each correct answer was allotted one point, and the total summation of the discrete scores of the different items was calculated. A teacher with a score less than 60% (0–4 points) of the total score was considered to have poor awareness, while those with a score of 60% or more (5 points or more) were deemed to have good awareness. Descriptive analysis based on frequency and percent distribution was done for all the variables, including teachers' socio-demographic data, history of having information regarding epistaxis first aid, and history of encountering male/female students or one of the school's employees with nosebleeds. Further, the participants' awareness regarding epistaxis first aid and their practice in the event of encountering a student with epistaxis were presented in frequency tables and graphs. Cross tabulation was used to assess the distribution of teachers' awareness levels regarding epistaxis first aid according to their personal data, disease history, and having information about epistaxis first aid. Relations were tested using Pearson chi-square test and exact probability test for small frequency distributions.

Confidentiality and ethical approval

The research was approved by the Directorate Health Affairs-Aseer Region, Regional Committee for Research Ethics.

Results

A total of 394 teachers in Aseer Region fulfilling the inclusion criteria completed the study questionnaire. The teachers' ages ranged from 20 to 59 years, with a mean age of 37.2 ± 11.6 years. Among the participants, 213 (54.1%) teachers were males and 391 (99.2%) worked at government schools. A total of 171 (43.4%) teachers taught the primary level, 90 (22.8%) the intermediate level, and 133 (33.8%) the secondary level. A total of 155 (39.3%) teachers taught scientific subjects, while 239 (60.7%) taught literary subjects. Overall, 178 (45.2%) teachers reported that they had received some information about epistaxis first aid, while 286 (72.6%) had encountered male/female students or one of the school's employees with nosebleeds (Table 1).

Table 2 details the awareness regarding first aid management of epistaxis among school teachers in Aseer region, Saudi Arabia. A total of 75.9% of the teachers in this study correctly reported that they would apply nasal compression in case of nosebleeds. When asked how they would try to stop the bleeding, 58.1% reported that they would keep the head tilted forward, and 55.8% stated that they could put ice on the head or nose. A total of 53.7% knew that they should go to the emergency in case the nosebleed continued for more than 10 min. Only 49.5% reported that they would block the nose with tissue or

Table 1 Socio-demographic data of the participant teachers in Aseer Region, Saudi Arabia

Socio-demographic data	No.	%
Age in years		
< 25	5	1.3%
25–35	47	11.9%
36–45	202	51.3%
> 45	140	35.5%
Gender		
Male	213	54.1%
Female	181	45.9%
School type		
Government	391	99.2%
Private	3	.8%
Teaching level		
Primary	171	43.4%
Intermediate	90	22.8%
Secondary	133	33.8%
Specialty		
Scientific	155	39.3%
Literary	239	60.7%
Have you ever received any information about epistaxis first aid?		
Yes	178	45.2%
No	216	54.8%
Have any of the male/female students or one of the school's employees had nosebleeds?		
Yes	286	72.6%
No	108	27.4%

gauze, while 11.9% knew the compression time to be 6–10 min.

Figure 1 illustrates the overall awareness level regarding first aid management of epistaxis among school teachers in Aseer region, Saudi Arabia. A total of 61 (15.5%) teachers in this study had good awareness regarding the first aid of epistaxis, while 333 (84.5%) had poor awareness levels.

Figure 2 highlights the methods the teachers stated they would use to stop the bleeding in case of epistaxis attacks. A vast majority (81%) reported that they did not know what to do when faced with a case of epistaxis in their schools. Only 6.1% reported that they would apply cold water or ice to the nose, 4.6% noted they would compress the nose, 2.8% said they would call an ambulance or go to the hospital, 1.8% stated they would apply gauze to the nose, and 1% reported they would keep the head tilted back.

Table 3 delineates the distribution of teachers' awareness level regarding the first aid of epistaxis according to their socio-demographic data. Overall, 26.9% of young teachers (< 35 years) had good awareness level compared to 10.9% of middle-aged teachers, with a recorded statistical significance of P=.011. Additionally, 20.2% of male teachers had good awareness in comparison to 9.9% of females (P=.005). Good awareness regarding epistaxis first aid was detected among 18.7% of primary-grade teachers compared to 18% of those who taught secondary grades and 5.6% who taught intermediate grades (P=.012). A total of 20.6% of teachers who taught scientific subjects had good awareness compared to 12.1% of the other teachers (P=.023). Further, good awareness was significantly higher among teachers who received any information about epistaxis first aid than those who did not (21.9% and 10.2%, respectively; P=.001).

Discussion

Globally, epistaxis is one of the most frequent emergencies [8]. It affects about 10–12% of the population, and 10% needs advanced medical intervention [9]. While epistaxis can originate from anterior or posterior sources, roughly 90% of nosebleeds originate from Kiesselbach's plexus (Little's area) on the anterior part of the nasal septum [10, 11]. While some epistaxis needs intervention and requires hospital admission, most epistaxis attacks are self-limiting, benign, and controlled with standard first aid measures such as simple nasal compression [12]. Knowledge and awareness regarding the

Table 2 Awareness regarding first aid management of epistaxis among school teachers in Aseer Region, Saudi Arabia

Awareness items	No.	%
If you encounter a case of nosebleed, how will you try to stop the bleeding?		
Apply nasal compression	299	75.9%
Let it bleed without pressure	28	7.1%
Do not know	67	17.0%
If you apply pressure on the nose to stop the bleeding, on which part of the nose will you apply it?		
Below the nose	108	27.4%
Top of the nose	286	72.6%
How long will you hold pressure on the nose to stop the bleeding?		
11–20 min	5	1.3%
6–10 min	47	11.9%
2–5 min	180	45.7%
< 2 min	162	41.1%
Would you block the nose with tissue or gauze?		
Yes	195	49.5%
No	199	50.5%
How will you change the position of the head?		
Head tilted forward	229	58.1%
Head tilted back	165	41.9%
Would you put ice on the head or nose?		
Yes	220	55.8%
No	174	44.2%
When do you think it is necessary to go to the emergency in cases of nosebleeds?		
If the bleeding continues for more than 10 min	211	53.7%
If the bleeding continues for more than 30 min	124	31.6%
If the bleeding continues for more than 60 min	15	3.8%
Do not know	43	10.9%

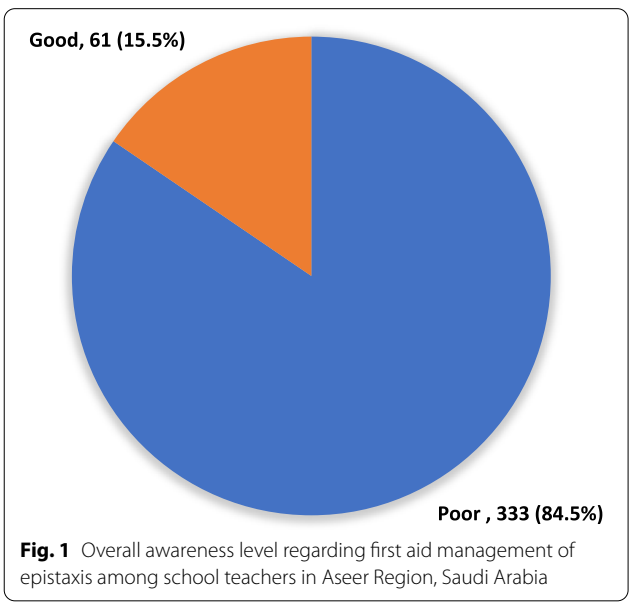

Fig. 1 Overall awareness level regarding first aid management of epistaxis among school teachers in Aseer Region, Saudi Arabia

first aid measures required to manage acute epistaxis without hospital facilities are vital; however, they are not commonly known, in spite of the high prevalence of epistaxis [12, 13]. School students are hyperactive due to the high energy and power afforded by their age, so they are more liable to accidents, trauma, or any other factors that may increase their risk of bleeding attacks, including epistaxis [14]. This foregrounds the significance of having teachers with high awareness regarding epistaxis first aid measures to provide initial management for the students until the attack is controlled or medical help is sought. The current study aimed to assess school teachers' awareness regarding epistaxis in Aseer region, Saudi Arabia.

The study showed that less than one fifth (15.5%) of the teachers in this study had good awareness regarding epistaxis first aids. In particular, more than three quarters (75.9%) of the teachers correctly knew that they should apply nasal compression in case of nosebleeds, but very few of them (11.9%) were aware of the compression time of 6–10 min. Further, nearly one fifth (27.4%) knew that compression should be applied below the nose. More than half the teachers (58.1%) reported that they would

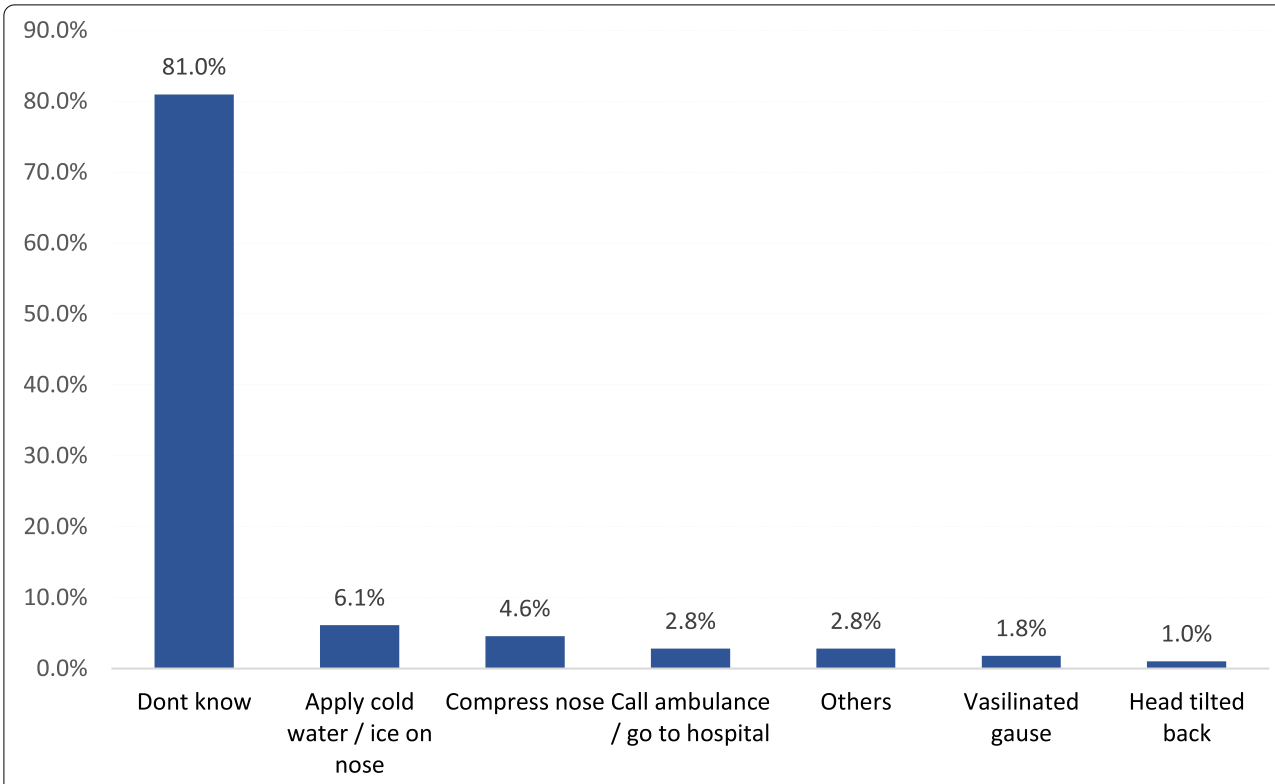

Fig. 2 Methods the teachers reported they would employ to stop the bleeding in case of epistaxis attacks

keep the head tilted forward and that they would put ice on the head or nose. A total of 53.7% knew that they should go to the emergency in case the nosebleed continued for more than 10 min. Only 49.5% reported that would block the nose with tissue or gauze. It is evident that while the teachers had good knowledge pertaining to some items, their knowledge regarding the procedures, especially the nasal compression site and duration, was inadequate. This suggests that despite exhibiting good awareness for individual items, overall, the teachers had poor awareness regarding first aid measures. Awareness regarding the first aid of epistaxis was significantly higher among the teachers belonging to the young and old age groups, which needs further assessment. Similarly, male teachers were more knowledgeable in this area than their female counterparts, which can be explained by the fact that male students are more active than females and, consequently, more susceptible to trauma; correspondingly, male teachers were more frequently exposed to this condition. Teachers concerned with scientific subjects showed significantly higher awareness than those who taught the literary division, which can be attributed to the nature of materials they deal with, often covering certain health-related issues. Furthermore, teachers who had previously received some information regarding epistaxis first aid showed significantly higher awareness level; however, this was unsatisfactory as only one out of five had good awareness level.

The results of the current study were consistent with the observations reported in India by Joseph et al. [15]. The authors found that about 47% of the teachers had received first aid training previously. Poor and moderate knowledge of first aid was detected among 13% of the teachers. Better awareness levels were detected by Al-Kubaisy et al. among school teachers in Riyadh, Saudi Arabia [16], where about one third of the teachers had good awareness of epistaxis and its control methods. Nevertheless, awareness regarding the site and duration of nasal position were poor among all the teachers, compatible with the findings of the current study. Nearly 68.1% of the teachers had experienced at least one case of epistaxis in their schools. A total of 76.5% teachers reported the application of pressure on the nose as a method to control epistaxis; while 23% mentioned the lower part as the area for pressure, 12.8% talked about applying pressure for 6–10 min. Aljuaid et al. [17], in a study conducted in Taif, reported that most of the school teachers were aware of changing the position of the head, 80.1% knew about applying pressure on the nose, and nearly one third

Table 3 Distribution of the teachers' awareness level regarding the first aid of epistaxis according to their socio-demographic data

Socio-demographic data	Overall awareness level				*p*-value
	Poor (0–4)		Good (5–7)		
	No	%	No	%	
Age in years					.011*[$]
< 35	38	73.1%	14	26.9%	
36–45	180	89.1%	22	10.9%	
> 45	115	82.1%	25	17.9%	
Gender					.005*
Male	170	79.8%	43	20.2%	
Female	163	90.1%	18	9.9%	
School type					.457[$]
Government	330	84.4%	61	15.6%	
Private	3	100.0%	0	0.0%	
Teaching level					.012*
Primary	139	81.3%	32	18.7%	
Intermediate	85	94.4%	5	5.6%	
Secondary	109	82.0%	24	18.0%	
Specialty					.023*
Scientific	123	79.4%	32	20.6%	
Literary	210	87.9%	29	12.1%	
Have you ever received any information about epistaxis first aid?					.001*
Yes	139	78.1%	39	21.9%	
No	194	89.8%	22	10.2%	
Have any of the male/female students or one of the school's employees had nosebleeds?					.931
Yes	242	84.6%	44	15.4%	
No	91	84.3%	17	15.7%	

P, Pearson χ^2 test

[$] Exact probability test

[*] $P < 0.05$ (significant)

stated they would press on the lower part of the nose. Another study conducted in Alhassa [18] showed that 54% of the teachers had received information about first aid to stop epistaxis or hemorrhage. About two thirds of the teachers had encountered students with epistaxis before. Only 15% reported that they would not try to stop the bleeding, and 25% knew that they should press on the cartilaginous part of the nose. Nevertheless, more than half (57%) of the teachers knew that they should tilt the head forward. Similar results were reported among school teachers in Hail city [19].

Limitations of the study

The study population constituted only a limited number of participants.

The study depended on a subjective questionnaire.

It was not a retrospective study.

Conclusions and recommendations

The current study revealed that about two thirds of the teachers were knowledgeable regarding epistaxis and its management, despite the fact that less than half of them had not attended any training or courses related to this topic. The lowest awareness was regarding the method and duration of applying nasal compression. Awareness was found to be higher among younger teachers, male teachers, those who taught scientific subjects, and those who had prior information. More effort should be directed to improving the awareness of the whole community, including teachers, regarding emergency care such as for epistaxis. This can be achieved through mass media, by strategically employing the advantage afforded by the increased utilization of social media, and by including ER management in students' curricula.

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Authors' contributions
The research was supervised by Dr. DA. Literature review was done by Dr. ASA. Writing the research proposal was done by ABA. Data were collected by all authors with a support of those acknowledged in this research. Data analysis, writing research results, discussion and conclusion was done by Dr. NM and Dr. ASA. The abstract was written by Dr. DA and Dr. NM. Research publication was done by Dr. ASA and ABA. Research English editing, revision and publication continuation was done by Dr. HA, Dr. MA and Dr. TA. The author(s) read and approved the final manuscript.

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Availability of data and materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The research was approved by Directorate Health Affairs-Aseer Region, Regional Committee for Research Ethics. REC-NO: REC-06-05-2021. An informed written consent to participate in the study was provided by all participants.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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