MEDICAL SCIENCE

Do university students have enough knowledge of epistaxis management? A cross sectional study at Hail region in Saudi Arabia

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ABSTRACT

Objective: Epistaxis is a common condition encountered in primary health clinics and emergency departments. The present study aimed to assess awareness and knowledge of epistaxis management among students at the University of Hail. *Methods:* This study used a descriptive cross-sectional approach targeting Hail University students from January to June 2022. Questionnaires were used to collect the data from the participants. *Results:* Of the 824 participants, 62.4% were men and 37.6% were women. Most of the participant 71% had suffered from epistaxis. Majority of participants 28.4% believed that the main cause of epistaxis is fingernail trauma, followed by hypertension 18%, nasal fracture 11.3% and bleeding disorder 7.6%. The source of knowledge about epistaxis for most participants 67.5% was direct experience, followed by mass media 18.6%. Overall, Hail University students showed intermediate levels of knowledge of epistaxis management. *Conclusion:* Knowledge of epistaxis management among Hail University students was intermediate, with similar levels of knowledge among medical and non-medical students. This suggests the need to implement programs to increase awareness of epistaxis among university students, including medical students.

Keywords: Awareness, Epistaxis, Management, Hail University

1. INTRODUCTION

One of the most frequent emergency conditions in the ear, nose and throat (ENT) department is epistaxis (nosebleed), which can be anterior (90% of cases) or posterior (infrequent but may require medical attention) (Tabassom

and Cho, 2022). Numerous risk factors have been implicated in the etiology of epistaxis. It can affect any age group, although it is more frequent in young and older individuals. Although idiopathic factors account for 80–90% of epistaxis cases, many other etiological factors have been identified. These include local factors such as trauma, inflammation and neoplasia and other general causes such as hematological or environmental factors and drugs (Pope and Hobbs, 2005).

Epistaxis management is relatively easy and thus is usually assigned to junior physicians in the ENT department, emergency department or primary health care clinics (Ahmed et al., 2021). As only 6% of patients with epistaxis seek medical assistance, patients are often treated at home, with increased awareness in the general population, particularly among students. However, several guidelines are available for managing different grades of epistaxis (Tunkel et al., 2020; Thangavelu et al., 2021).

The essential part of the initial management of epistaxis consists of providing first aid to the patient. This measure can save the lives of many patients, particularly those with health-threatening conditions (Halawani et al., 2017). Raising awareness among students, particularly medical students, is essential and can lead to better initial management of patients with epistaxis in the community (Alyahya et al., 2019). However, there is no literature on awareness and knowledge of epistaxis management in the Hail region of Saudi Arabia. Thus, we aimed to assess the awareness and knowledge of management of epistaxis among students at the University of Hail.

2. MATERIALS AND METHODS

This study used a descriptive cross-sectional approach to target university students from January to June 2022 after obtaining approval from the research Ethics Committee at University of Hail, Saudi Arabia (No H-2022-012, dated 24/01/2022). Information from 824 participants was collected using an electronic questionnaire developed after intensive literature review and expert consultation and translated into Arabic. A panel of three experts reviewed the questionnaire for content validity and all the suggested modifications were applied until the final format was approved. The questionnaire was posted on social media platforms and was shared among the university community. All eligible students who received the questionnaire were invited to complete it after receiving an explanation of the main objectives and assuring data confidentiality. Inclusion criteria were university students above 18 years and willing to participate in the study. Those who were below 18 years or had incompletely filled surveys were excluded. The questionnaire included students' demographic data, faculty, academic degree, medical history, history of epistaxis, experience helping persons with epistaxis and participation in first-aid training. The second section included questions regarding epistaxis and its management, with one correct answer to each question. The last section covered the source of information regarding epistaxis among the study participants. A pilot study including 30 students was conducted to assess the reliability of attitude items and a Cronbach's alpha of 0.72 was obtained.

Data analysis

After data collection, the data were revised, coded and analyzed using IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analyses were performed using two-tailed tests. Statistical significance was set at 0.05. For the knowledge and awareness items, each correct answer was scored as one point and wrong answers as zero points. The total summation of the discrete scores for the different items covered general knowledge of epistaxis and its management. The knowledge score was based on 16 questions on related Knowledge, Attitude and Practice (KAP) and the scores were summed for each participant. Unanswered questions were not included in the KAP score. Furthermore, participants with a score less than 60% of the total score were considered to have a "poor level of knowledge" and "good knowledge" was considered if they had a total score of 60% or more.

3. RESULTS

This study comprised 824 students aged 18–35 years, including 514 (62.4%) men and 310 (37.6%) women. Of the 824 participants, 585 (71%) had suffered from epistaxis. The relative risk and 95% confidence interval (95%CI) were 1.6159 (1.4398– 1.8135), $P < 0.0001$.

Seven hundred thirty-eight (89.5%) participants reported having previous experience helping persons with epistaxis. Two hundred seventy-six (34%) participants had received information about first aid to stop epistaxis. To the question "*Is epistaxis is an emergency?*" 282 (34%) responded, "Yes" and 189 (23%) replied "no". Further, 506 participants replied "I don't know" (Table 1).

The source of knowledge about epistaxis for most participants 556 (67.5%) was direct experience, followed by mass media 154 (18.7%) However, 29 individuals (3.5%) had received a "*first- aid training*", as indicated (Table 1) (Figure 1).

Table 1 Individuals' knowledge about epistaxis

Variable	Men (n=514)	Women (n=310)	Total (n=824)
Have you ever experienced epistaxis?			
Yes	426	159	585
No	88	151	239
Have you ever seen a person with epistaxis?			
Yes	459	279	738
No	55	31	86
Have you ever received first-aid information on how to stop epistaxis?			
Yes	103	173	276
No	411	137	548
Epistaxis is an emergency			
Yes	110	172	282
No	135	54	189
I don't know	269	84	353
Is epistaxis more frequent among men or women?			
Men	149	65	214
Women	50	54	104
I don't know	315	191	506
Source of knowledge about epistaxis			
Direct experience	300	256	556
First aid workshop	3	26	29
Mass media	141	13	154
Physician	27	2	29
Medical book	37	5	42
Others	6	8	14

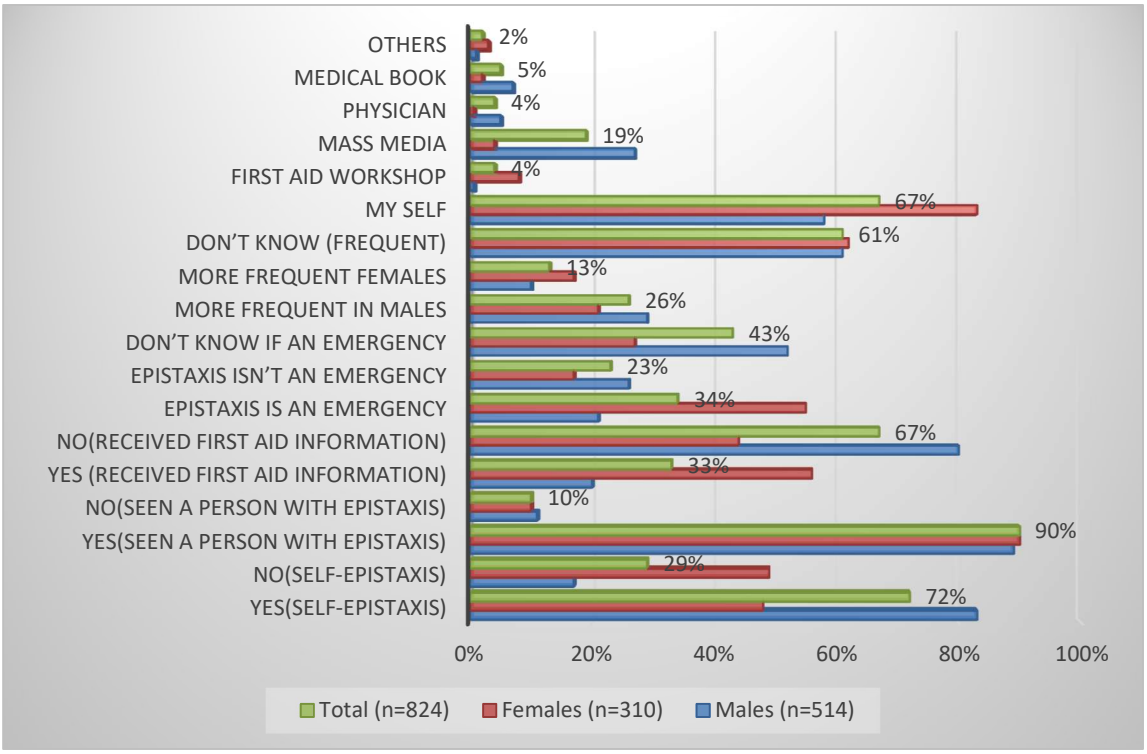

Figure 1 Proportions of personal knowledge about epistaxis

Most participants 234 (28.4%) believed that the main cause epistaxis is "fingernail trauma", followed by "hypertension" 149 (18%), "nasal fracture" 93 (11.3%) and "bleeding disorder" (63 (7.6%). Further, 285 (34.6%) participants replied, "I don't know" (Table 2).

Most contributors 213 (26%) believed that the source of epistaxis is the "Kiesselbach's plexus", followed by the "anterior ethmoid artery" 95 (11.5%) and the "posterior ethmoid artery" 22 (2.7%). To the question "*In case of epistaxis, should you pinch the nose?*" 425 (51.6%) answered, "yes and 283 (34.4%) replied "I don't know".

To the question "*If you answered 'yes', where should you pinch the nose?*" the majority 403 (50%) answered "I don't know". Further, 234 (28.4%) participants selected the "cartilaginous part (lower)" 141 (17%) chose the "bony part (upper)" and 46 (5.6%) indicated that both sites should be pinched (Table 2).

Table 2 Knowledge levels about the causes of epistaxis

Variable	Men (n=514)	Women (n=310)	Total (n=824)
Most common cause of epistaxis?			
Fingernail trauma	199	35	234
Nasal fracture	53	40	93
Bleeding disorders	31	32	63
Hypertension	44	105	149
I don't know	187	98	285
Source of epistaxis			
Kiesselbach's plexus	173	40	213
Anterior ethmoid artery	66	29	95
Posterior ethmoid artery	12	10	22
I don't know	263	231	494
If you had epistaxis, should you pinch the nose?			
Yes	217	208	425
No	58	58	116
I don't know	239	44	283
If you answered "yes," where should you pinch the nose?			
Cartilaginous part (lower)	137	97	234
Bony part (upper)	67	74	141
Both	17	29	46
I don't know	293	110	403
Duration of nose pinch			
10–20 min	13	28	41
5–10 min	52	37	89
2–5 min	88	87	175
< 2 min	70	45	115
I don't know	291	113	404

Regarding the duration of the nose pinch, 404 (49%) participants answered "I don't know", 175 (21.2%) answered "2–5 min", and 115 (14%) answered "<2 min", (Table 2).

Table 3 summarizes the knowledge about the management of epistaxis. For the question "*During pinch nose, how should the patient breathe?*" 409/824 (50%) participants indicated that the patient should breathe through the mouth to avoid swallowing blood. Further, 38 (5%) participants indicated that the patient should breathe through the nose and pressure should be applied and 369 (44.8%) participants answered "I don't know".

Of 824 participants, 545 (66%) considered that "*Body position during epistaxis should be upright*", 116 (1.3%) answered that the patient should be lying on the back, 16 (2%) answered that the patient should be lying on the side and 147 (18%) answered "I don't know".

Most participants agreed that the "*proper head position during epistaxis*" should be "tilted forward" 441 (53.5%) followed by "tilted backward" 153 (18.6%) and the rest of the participants 230 (28%) answered "I don't know". To the question "*Should the nose be filled with tissue or gauze?*" 495 (60%) responded "yes".

To the question "*Do you think that using ice can reduce blood flow to the nose?*" 390 (47.3%) participants responded "yes", 92 (11%) responded "no" and 342 (41.5%) answered "I don't know".

Most participants 214(26%) assumed that "nose and back of the neck" is the best site for placing ice, followed by "forehead" 157 (19%) and "hands" 8 (1%), while the rest of the participants 445 (54%) "I don't know".

On asking the participants "*When should patients with epistaxis seek emergency care?*", most 120 (14.6%) answered that in case of "Persistent nose bleeding for more than 20 min for a period of 10 to 20 min with direct nasal compression" followed by "Recurrent epistaxis more than four times a week despite all preventive measures" 106 (13%), "Massive nasal bleeding 33 (4%) and the rest of the participants 78 (9%) answered "I don't know" (Table 3).

Table 3 Knowledge about the management of epistaxis

Variable	Men (n=514)	Women (n=310)	Total (n=824)
During pinch nose, how should the patient breathe?			
Through the mouth to avoiding swallowing blood	206	203	409
Through the nose while applying pressure	24	14	38
The breath should be held	3	5	8
I don't know	281	88	369
Body position during epistaxis should be			
Upright	321	224	545
Lying on the back	71	45	116
Lying on the side	8	8	16
I don't know	114	33	147
During epistaxis, should the head position be changed?			
Yes	355	233	588
No	29	43	72
I don't know	130	34	164
Proper head position during epistaxis?			
Tilted forward	263	178	441
Tilted backward	93	60	153
I don't know	158	72	230
Should the nose be filled with tissue or gauze?			
No	58	139	197
Yes	368	127	495
I don't know	88	44	132
Do you think that using ice can reduce blood flow to the nose?			
Yes	202	188	390
No	44	48	92
I don't know	268	74	342
Where should ice be applied?			
On the nose and back of the neck	116	98	214
On the forehead	72	85	157
On the hands	7	1	8
I don't know	319	126	445
When should patients with epistaxis seek emergency care?			
Persistent nose bleeding for more than 10-20 min with direct nasal compression	59	61	120
Massive nasal bleeding	13	20	33

Recurrent epistaxis (more than four times a week) despite all preventive measures	81	25	106
I don't know	50	28	78

The knowledge measurements are presented (Table 4). The overall level of knowledge in this series of participants was poor, with 619/824 patients (75%) showing a poor level of knowledge, including 399/514 (77.6%) men and 220/310 (71%) women. However, 205/824 (25%) participants showed a good level of knowledge, including 115 (22.4%) men and 90 (29%) women.

Table 4 Knowledge measurements

Knowledge score	Men (n=514)	Women (n=310)	Total (n=824)
0	39	5	44
1	34	9	43
2	22	8	30
3	23	6	29
4	32	20	52
5	44	23	67
6	48	38	86
7	68	33	101
8	63	41	104
9	35	43	78
10	38	35	73
11	31	17	48
12	14	14	28
13	14	8	22
14	6	9	15
15	3	0	3
16	0	1	1
Overall level of knowledge			
Poor	399	220	619
Good	115	90	205

Regarding the participants' specialty, of the 320 medical students, 222/320 (69.4%) showed poor knowledge and the remaining 98/320 (30.6%) showed good levels of knowledge. On the other hand, out of 504 non-medical students, 397/504 (79%) showed poor levels and the remaining 107/504 (21%) showed good levels. In the present study, 127 participants were smokers, of whom 100 (79%) had experienced epistaxis.

4. DISCUSSION

In this study, the level of awareness about management of epistaxis among students at the University of Hail was assessed. Although 39% of our study population was medical students, the overall level of awareness was poor. This low level might be attributed to the high number of participants from non-medical colleges as some reports from Saudi Arabia have shown a higher level of awareness of epistaxis among medical students (Alyahya et al., 2019). The present study's findings showed that men have a better level of knowledge of epistaxis than women. Studies from Saudi Arabia have demonstrated a poor knowledge of first-aid skills (Halawani et al., 2019).

In this study, the prevalence of self-reported epistaxis was 71%. A similar prevalence was recently reported in Saudi Arabia, (Zolaly et al., 2021) which is higher than the prevalence reported in other nations (60%) (Wojak, 2020). The prevalence of epistaxis in this study was significantly higher in men (51.7%) than in women (19.3%; $P < 0.0001$), which is in agreement with another report from Saudi Arabia (Al-Saleh et al., 2021).

In the current study, only 33.5% of the surveyed participants received information about epistaxis, which indicates the need to implement health education programs (including higher education programs) in different sectors of the country. This lack of awareness has been reported in similar Saudi studies that included non-medical students (Halawani et al., 2019).

For most participants, the source of knowledge about epistaxis was direct experience, followed by mass media. Social media has appeared to be an influential instrument for public health promotion in Arab countries in general, and particularly in Saudi Arabia. Gulf Arabian countries have the highest Internet-related social media usage rates globally (Al-Sadrah, 2021). Social media have improved community-related health education programs in many developing countries (Bahkali et al., 2015). Consequently, social media is a good tool that can provide an opportunity to raise awareness among the Saudi community rather than just among students.

In this study, the most reported cause of epistaxis was fingernail trauma, followed by hypertension. However, specific measurements should be conducted by a physician to determine the exact cause. Kiesselbach's plexus, which is located in the anterior region of the nose, was reported to be the most frequent source of epistaxis, with an approximated lifetime prevalence of 60% (Thangavelu et al., 2021). However, many participants in this study ignored the sources of epistaxis and medical student held the most positive responses.

Approximately 52% of contributors believed that the initial management of epistaxis involved pinching the nose. A study that evaluated knowledge and first-aid management among medical students found that about 71% of students agreed that the initial management of epistaxis consists of pinching the nose (Alyahya et al., 2019). The lower percentage observed in this study might have been due to the inclusion of non-medical students. Nevertheless, most participants did not know which part of the nose should be pinched or for how long.

Approximately 50% of participants agreed that the patient should breathe through the mouth to avoid blood swallowing when the nose is pinched. However, the overall knowledge about epistaxis management in this study was intermediate (Table 4). This indicates the need to implement health education programs on epistaxis management and first-aid management in general.

Regarding specialties, there were no significant differences in the knowledge scores between medical and non-medical students, although medical students showed better knowledge in most of the items associated with epistaxis. As the cutoff point between poor knowledge and good knowledge was determined to be 60% rather than 50%, the overall level of knowledge was intermediate. Importantly, a significant number of smokers in this study reported epistaxis and thus, smoking was found to increase the risk of bleeding (Langsted and Nordestgaard, 2019).

5. CONCLUSION

In Conclusion, the overall level of knowledge about epistaxis management among Hail University students was intermediate. There were no significant differences in knowledge scores between medical and non-medical students. However, medical students showed better knowledge in most areas associated with epistaxis. Introducing awareness programs on epistaxis is necessary for medical and non-medical students. This study provides a database for designing future studies including Hail region with other regions in Saudi Arabia.

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Author Contributions

All the authors contributed equally in obtaining data, drafting, revising and writing the research.

Ethical approval

The study was approved by the Medical Ethics Committee of University of Hail (Ethical approval code: H-2022-012).

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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