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Assessment of Knowledge and Attitude of First Aid Management of Epistaxis among the General Population in Najran Region: A Cross-Sectional Study

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Abstract

Background: Nasal bleeding, epistaxis, is a common emergency. Few Saudi studies exist on epistaxis awareness and first aid management. We aimed to assess knowledge and attitude of adults in Najran, Saudi Arabia towards epistaxis first aid management, as well as their association with sociodemographic factors.

Methods: A cross-sectional web-based survey was carried out involving general adults of Najran, Saudi Arabia, using a snowball sampling method. A pretested questionnaire was utilized for data collection. Knowledge and attitude scores were categorized as good/positive or poor/negative. Both descriptive and inferential statistics were carried out with odds ratio (OR), 95% confidence intervals (CIs), and logistic regression analysis to investigate factors associated with knowledge and attitude towards epistaxis first aid management using SPSS Software.

Results: The study included 518 participants with 58.9% experienced nosebleeds. Common causes were hypertension (24.5%) and nose injuries (23.7%). Factors as nasal dryness, blood thinner use, and tumors/nasal polyps were also identified. Around 60.2% believed first aid was necessary and 59.5% had good knowledge about epistaxis first aid management. Participants with university/higher education, employed in health sector, and with previous experience with nosebleed were more knowledgeable, more likely to have positive attitudes, and showed significantly higher ORs for knowledge and attitude scores compared to others.

Conclusion: The study showed fair knowledge and attitude of Najran adults towards epistaxis first aid management with sociodemographic variables showing varying associations. Educational initiatives are needed especially for those with lower education, non-health sectors, and not experienced nosebleeds, to improve public first aid knowledge and attitudes.

Introduction

One of the most commonly reported emergencies in the ear, nose, and throat department is nasal bleeding, generally referred to as epistaxis [1,2]. The causes of epistaxis can vary from benign (e.g., picking one's nose, dry air breathing) to dangerous (e.g., high blood pressure, infections), and even potentially lethal (e.g., malignancies) [3]. Reports state that approximately 10% of epistaxis cases in the general population need medical attention and have some connection to family care and family physical responsibilities [4,5].

A bimodal distribution of ages is visible, with younger (2–10 years) and older (50–80 years) peaks [6]. Based on its location, epistaxis is classified as anterior or posterior. The internal and external carotid arteries, two major arteries, give blood to the extremely vascular nose. Anatomically, epistaxis typically originates from the Little's or Keisselbach's area. Epistaxis is usually spontaneous, benign, and self-limiting and can be treated at home with proper first aid [7]. However, good knowledge of the general population is important for managing acute cases.

Sowerby et al. found that the general knowledge of Canadian healthcare providers about first aid of epistaxis was poor. Regarding where to apply nasal compression and proper head positioning, around 8–43% and 54–62% of all groups of healthcare providers responded correctly [8]. In Kenya, Mugwe et al., found that the clinical staff in the accident & emergency department lack appropriate training in how to treat epistaxis according to typical first aid procedures with only 38.1% showed the proper site for nose pinching. However, the majority of them had a positive attitude and had given first aid to patients who had epistaxis [9].

In various Saudi regions, there have been a few studies on epistaxis awareness and first aid management. In Taif, Alam et al. explored knowledge and awareness of 502 parents on epistaxis first aid. They found that 30.9% of parents had a good knowledge level and 67.5% showed a moderate knowledge level regarding first aid of epistaxis. Additionally, parents who were older than 35 ($P = 0.017$), had previously experienced epistaxis ($P = 0.026$), or had taken a first aid course ($P = 0.002$) all had higher knowledge scores [10].

In their study at Qassim region, Alanazy et al. revealed that among 1,152 schoolteachers, 80.6% had a lack of knowledge of first aid for treating epistaxis in school-aged children [11]. In Riyadh, Alshehri et al. found that 73.5% of the public have heard about, witnessed, or personally experienced epistaxis while 63% have participated in a first-aid management training or awareness program. The right epistaxis definition was reported by 78% while only 34.8% correctly identified the subtypes as anterior and posterior. Most participants (79%) believed that trauma and injury were the main causes of epistaxis [12].

The Najran region, Saudi Arabia has seen very few studies on general population knowledge and attitudes on this concern. In this view, we aimed to investigate knowledge and attitude of adults in Najran, Saudi Arabia towards epistaxis first aid management, as well as to determine the association between knowledge and attitude levels with sociodemographic factors.

Methods

Study design

A cross-sectional web-based survey design was used.

Population and inclusion criteria

Both male and female adult residents of Najran region, Saudi Arabia, aged 18 years and older, of any nationality were included in the research.

Exclusion criteria

Those who did not reside in Saudi Arabia, did not have any accounts on social media, or declined to participate in the research were omitted.

Sampling and sample size

The study utilized a snowball sampling method, and the sample size was determined using the Raosoft sample size calculator (http://www.raosoft.com/samplesize.html). Based on a total population size of 377,879 of eligible participants living in Najran region [according to the Statistical Yearbook published by General Authority for Statistics, 2022 (https://portal.saudicensus.sa/portal/public/1/15/101464?type=TABLE)], 50% anticipated response, 5% margin of error, and 95% confidence level, the minimum sample size required was 384.

Study tool

The study utilized an online survey during a three-month period from January to March 2023. A total of 618 complete responses were included of which 518 (83.9%) were eligible respondents matched the inclusion criteria. The questionnaire was developed both in English and Arabic after a thorough search in the literature on epistaxis-related factors. It was reviewed by a third-party Arabic language specialist before being translated back into English to make sure the text had not been altered. Two impartial academic experts reviewed the initial draft to validate questions in terms of relativity, clarity, and simplicity. Cronbach alpha reliability coefficient was used to examine the internal consistency of items that was 0.77 for knowledge. The questionnaire was pretested as a pilot on 25 subjects of both genders and adult age groups to explore its objectivity and validity and any required

modifications were fixed and the final analysis did not include the pilot data. The final form was agreed after group discussion with a completion time of about 4-8 minutes.

Questionnaire and scoring system

The questionnaire was self-reported and covered the following items:

- Sociodemographic characteristics: age, gender, education level, marital status, employment, and monthly income.
- Sources of their knowledge about epistaxis.
- They were asked about their perceived causes and previous experience with nosebleeds.
- Their knowledge about epistaxis was assessed using six MCQ questions including the optimal position to stop epistaxis (head tilt back, head tilt forward, lying down with feet elevated, don't know), whether applying pressure on the nose and the use of nasal drops could stop bleeding (yes, no, don't know), part of the nose treated during epistaxis (anterior cartilage, nose bone on back, don't know), time to press on nose to stop bleeding (five minutes, from 6 to 10 minutes, from 11 to 15 minutes, from 16 to 20 minutes), and appropriate time to visit emergency department (ED) in case of epistaxis (if epistaxis lasts for more than 20 minutes, more than 40 minutes, more than 60 minutes, no need to visit ED). One point was given for each right answer and no points for wrong/don't know answers. The total score was 6 and participants with scores above the median (more than 3 points) were assumed to have good knowledge and those with 3 or less points were considered to have poor knowledge.
- Their attitude towards epistaxis was assessed by asking whether first aid is necessary in case of epistaxis (yes, no, don't know). Answering "yes" considered a positive attitude while "no, don't know" were considered a negative attitude.

The survey was uploaded by the online Google survey platform and distributed via popular social media channels within the Kingdom such as WhatsApp, Twitter, and Telegram. Participants were encouraged to share the survey link to family, friends, and relatives. Additionally, personal communications helped fast dissemination of the questionnaire. Respondents were not offered any incentives of any kind for sharing links to the poll or for participating; participation was entirely voluntary.

Ethical approval

It was acquired from the Najran University's Ethics Committee (#2022NU.P204, 10/2022). To ensure participant understanding, the online survey had a cover page with an information letter outlining the goals of the study and the essential items covered. On the cover page, all anonymous respondents electronically provided written informed consent after selecting the "Accept to participate" icon, signifying their voluntary involvement, and they were able to exit the online survey without completing it at any time with no need to give a justification.

Statistical analysis

Both descriptive and inferential statistics were carried out. Simple frequencies and percentages of the categorical variables were calculated and tabulated. Chi-square or Fisher exact tests were utilized to find the significant association between the different sociodemographic and both knowledge and attitude scores. Further associations were examined using odds ratio (OR) with 95% confidence intervals (CIs) that considered two models; Model I (unadjusted OR) including the total sample, and Model II (adjusted for all covariates to preclude the confounding effects of heterogeneity among population; age, gender, marital status, education level, employment, monthly income, previous experience with nosebleed). Factors associated with both knowledge and attitude scores (as dependent variables) were examined by logistic regression analysis where OR and 95% CI were computed for each sociodemographic factor (as independent variables). Statistical significance was established at a p-value of < 0.05 (two-tailed). All the statistical tests were carried out using the SPSS Software (V 29.0, Armonk, NY: IBM Corp., USA).

Results

The study included 518 participants who met the inclusion criteria with 45.6% were female and 54.4% were male. More than two-thirds (69.3%) were from the age group 18 – 35 years followed by the age group 36-50 years (26.4%). More than half of them (56.9%) were single and 40.3% were married. Regarding educational levels, 69.3% and 26.4% had university/higher and high school education respectively. The employment of 21.2% was in the health sector while 57.5% were unemployed. Monthly income levels varied, with 57.7% earning < 5000 SAR and 33% earning 5000-15000 SAR. About 58.9% of participants previously experienced nosebleeds (Table 1).

Variables		Frequency (n= 518)	Percent (%)
Gender	Male	282	54.4
	Female	236	45.6
Age (years)	18 – 35	359	69.3
	36 – 50	137	26.4
	> 50	22	4.2
Marital status	Single	295	56.9
	Married	209	40.3
	Divorced/Widow	14	2.7
Educational level	Elementary	9	1.7
	Intermediate	13	2.5
	High school	137	26.4
	University/Higher	359	69.3
Employment	Health-sector	110	21.2
	Other sectors	110	21.2
	Unemployed	298	57.5
Monthly income (SAR)	< 5000	299	57.7
	5000 – 15000	171	33.0
	> 15000	48	9.3
Ever have nosebleed	Yes	305	58.9
	No	213	41.1

Table 1: Sociodemographic characteristics and experience with nosebleed among participants.

Variables		Frequency (n= 518)	Percent (%)
First aid is necessary in case of epistaxis	Yes*	312	60.2
Optimal position to stop epistaxis	Head-tilting back	174	33.6
	Head-tilting forward *	234	45.2
	Lying down with feet elevated	25	4.8
Pressure on nose stop bleeding	Yes *	266	51.4
Nasal drops stop bleeding	Yes *	63	12.2
Part of nose to be treated during epistaxis	Anterior cartilage *	262	50.6
	Nose bone on back	108	20.8
Time to press on nose to stop bleeding (minutes)	Five minutes	347	67.0
	From 6 to 10 min *	133	25.7
	From 11 to 15 min	28	5.4
	From 16 to 20 min	10	1.9
Appropriate time to visit emergency department in case of epistaxis (minutes)	Epistaxis for > 20 min *	336	64.9
	Epistaxis for > 40 min	68	13.1
	Epistaxis for > 60 min	38	7.3
	No need to go	21	4.1

*: Correct/positive answers.

Table 2: Knowledge and attitude of participants towards epistaxis first aid management.

Variables		Knowledge score			Attitude score		
		Poor n=210 (%)	Good n=308 (%)	P-value	Negative n=206 (%)	Positive n=312 (%)	P-value
Gender	Female	94 (44.8)	142 (46.1)	0.763	95 (46.1)	141 (45.2)	0.836
	Male	116 (55.2)	166 (53.9)		111 (53.9)	171 (54.8)	
Age (years)	18 – 35	145 (69.0)	214 (69.5)	0.176	139 (67.5)	220 (70.5)	0.103
	36 – 50	60 (28.6)	77 (25.0)		62 (30.1)	75 (24.0)	
	> 50	5 (2.4)	17 (5.5)		5 (2.4)	17 (5.4)	
Marital status	Single	123 (58.6)	172 (55.8)	0.465	117 (56.8)	178 (57.1)	0.572
	Married	79 (37.6)	130 (42.2)		81 (39.3)	128 (41.0)	
	Divorced/Widow	8 (3.8)	6 (1.9)		8 (3.9)	6 (1.9)	
Educational level	Elementary	6 (2.9)	3 (1.0)	0.047*	6 (2.9)	3 (1.0)	0.043*
	Intermediate	3 (1.4)	10 (3.2)		4 (1.9)	9 (2.9)	
	High school	65 (31.0)	72 (23.4)		65 (31.6)	72 (23.1)	
	University/ Higher	136 (64.8)	223 (72.4)		131 (63.6)	228 (73.1)	
Employment	Health-sector	34 (16.2)	76 (24.7)	0.023*	31 (15.0)	79 (25.3)	0.013*
	Other sectors	41 (19.5)	69 (22.4)		43 (20.9)	67 (21.5)	
	Unemployed	135 (64.3)	163 (52.9)		132 (64.1)	166 (53.2)	
Monthly income (SAR)	< 5000	128 (61.0)	171 (55.5)	0.288	127 (61.7)	172 (55.1)	0.070
	5000 – 15000	67 (31.9)	104 (33.8)		67 (32.5)	104 (33.3)	
	> 15000	15 (7.1)	33 (10.7)		12 (5.8)	36 (11.5)	
Ever have nosebleed	Yes	112 (53.3)	193 (62.7)	0.037*	110 (53.4)	195 (62.5)	0.045*
	No	98 (46.7)	115 (37.3)		96 (46.6)	117 (37.5)	

Values present as number & percent were analyzed by Fisher exact or Chi-square tests.

*: Significant.

Table 3: Association of knowledge and attitude scores towards epistaxis management with different sociodemographic features and experience with nosebleed.

Variables	No. of cases	Model I OR (95% CI)	P-value	Model II AOR (95% CI)	P-value
Knowledge score					
Educational level					
Elementary	9	Reference (1.00)	0.001*	Reference (1.00)	0.023*
Intermediate	13	0.31 (0.08–1.24)		0.22 (0.05–1.16)	
High school	137	0.68 (0.45–1.81)		0.54 (0.37–1.38)	
University/Higher	359	2.95 (1.19–7.63)		2.03 (0.55–4.51)	
Employment					
Unemployed	298	Reference (1.00)	<0.001*	Reference (1.00)	<0.001*
Health-sector	110	1.46 (0.86–3.55)		1.24 (0.97–2.41)	
Other sectors	110	0.47 (0.36–1.82)		0.42 (0.32–0.96)	
Ever have nosebleed					
No	213	Reference (1.00)	0.034*	Reference (1.00)	0.041*
Yes	305	1.47 (1.03–2.10)		1.29 (0.87–2.00)	
Attitude score					
Educational level					
Elementary	9	Reference (1.00)	0.020*	Reference (1.00)	0.015*
Intermediate	13	0.54 (0.14–1.45)		0.36 (0.08–0.96)	
High school	137	0.91 (0.65–1.76)		0.66 (0.24–1.16)	
University/Higher	359	1.37 (1.04–3.82)		1.18 (0.62–2.46)	
Employment					
Unemployed	298	Reference (1.00)	0.045*	Reference (1.00)	0.023*
Health-sector	110	2.35 (1.68–6.33)		1.61 (1.19–2.57)	
Other sectors	110	0.88 (0.72–2.15)		0.64 (0.43–0.94)	
Ever have nosebleed					
No	213	Reference (1.00)	0.033*	Reference (1.00)	0.040*
Yes	305	1.46 (1.02–2.08)		1.38 (0.96–1.98)	

AOR: Adjusted odds ratio; OR: Odds ratio; Model I: Unadjusted; Model II: Adjusted for all covariates: age, gender, education level, marital status, employment, monthly income, and previous experience with nosebleed.
* Significant.
Table 4: Odds ratios of knowledge and attitude scores with educational level, employment, and previous experience with nosebleed.

Independent variables	Knowledge score			Attitude score		
	Coeff.	OR CI (95%)	P-value	Coeff.	OR CI (95%)	P-value
Educational level (university/higher)	-0.16	0.85 (0.64–1.14)	0.076	-0.24	0.78 (0.59–1.05)	0.100
Employment (health-sector)	0.27	1.31 (1.03–1.64)	0.025*	0.28	1.32 (1.04–1.66)	0.020*
Ever have nosebleed (yes)	0.35	1.41 (0.99–2.02)	0.041*	0.34	1.41 (0.98–2.02)	0.043*

Coeff.: Coefficient, OR: Odds ratio, CI: Confidence interval.
*: Significant.
Table 5: Multinomial logistic regression of factors associated with knowledge and attitude scores towards epistaxis management

The most common perceived causes of nosebleeds were hypertension (24.5%), followed closely by nose injuries (23.7%). Other factors included nasal dryness (15.2%), use of blood thinners (12.5%), and tumors/nasal polyps (11.8%). A notable portion (9.7%) didn't know the cause, and a smaller percentage attributed it to other reasons (2.6%).

When asked about their sources of health information about epistaxis, relatives and friends were the most common source (34.6%) followed by TV and social networking sites (18.6%). Other sources included information gathered during their studies (13.9%), consultations with doctors and medical staff (9.5%), participation in educational seminars and courses (7.6%), while 15.7% reported not having access to health information.

Regarding their knowledge about epistaxis, 45.2% correctly recognized the head-tilting forward as an optimal position to stop epistaxis, 51.4% and 12.2% knew that pressing on the nose and the use of nasal drops could stop bleeding respectively, and 50.6% were knowledgeable that the anterior cartilage of the nose was the part to be treated during epistaxis. Around one-fourth (25.7%) correctly knew that pressure on the nose should stop bleeding within 6 to 10 minutes and 64.9% knew that epistaxis lasting over 20 minutes required an ED visit. Regarding their attitude, around 60.2% believed first aid was necessary during epistaxis. (Table 2)

Around 60% of participants reported good knowledge and positive attitude scores towards epistaxis first aid management. The relationship between knowledge and attitude scores and various sociodemographic characteristics and nosebleed experience among participants revealed a significant association between knowledge score and the level of educational (p=0.047), employment (p=0.023), and previous experience with nosebleed (p=0.037), and between attitude score and educational status (p=0.043), employment (p=0.013), and previous experience with nosebleed (p=0.045), indicating that those with university/higher education, employed in the health sector, and previous experience with nosebleed were more knowledgeable and more likely to have positive attitudes as compared to others. However, gender, age, marital status, and monthly income did not exhibit statistically significant

associations with either knowledge or attitude scores. (Table 3)

We analyzed variables (educational level, employment, and previous experience with nosebleed) in univariate analysis that significantly affect knowledge and attitude scores towards epistaxis first aid management (as categorical variables) to explore their association (considering participants with elementary education, unemployed, and not experienced nosebleed as reference groups) utilizing both adjusted and unadjusted models. The ORs indicated a significant association between knowledge and attitude scores and both educational level, employment, and previous experience with nosebleed in the crude model. After adjustment of all factors in Model II, significantly higher ORs for knowledge score were found among those with university/higher education (2.03 [0.55–4.51]; p=0.023), those employed in the health sector (1.24 [0.97–2.41]; p<0.001), and those with previous experience with nosebleed (1.29 [0.87–2.00]; p=0.041) than others. Also, significantly higher ORs for attitude score were found among those with university/higher education (1.18 [0.62–2.46]; p=0.005), those employed in the health sector (1.61 [1.19–2.57]; p=0.023), and those with previous experience with nosebleed (1.38 [0.96–1.98]; p=0.040) than others. (Table 4)

Further multinomial logistic regression was done to investigate independent variables linked with knowledge and attitude scores towards epistaxis management. Employment in the health–sector (OR = 1.31; CI: 1.03–1.64) and previous experience with nosebleed (OR = 1.41; CI: 0.99–2.02), were significantly associated with knowledge score towards epistaxis management. Similarly, employment in the health-sector (OR = 1.32; CI: 1.04–1.66) and previous experience with nosebleed (OR = 1.41; CI: 0.98–2.02), were significantly associated with attitude score towards epistaxis management among participants. (Table 5)

Discussion

The research presented here delves into a comprehensive examination of knowledge and attitudes surrounding epistaxis first aid management, shedding light on variations in findings compared to existing studies and intriguing associations with sociodemographic factors.

While focusing on causes of epistaxis in our study, the most common was hypertension (24.5%), followed closely by nose injuries (23.7%) and other factors. In another study opposed to our results Alyahya et al., found that 39.7% of Saudi medical students considered fingernail trauma, a type of nose injuries, is the most frequent reason that was higher than our result followed by bleeding disorders (17.3%), hypertension (14.3%) that was lower than our finding, nasal fracture (5.3%), and "I don't know" (23.3%) [13]. Another Saudi study among general population of Tabuk city discussing causes of epistaxis found that 68.9% was due to excess nose manipulation, that could be considered as a type of nose injuries and was higher than our result and 42.2% were drug-induced epistaxis compared to 12.5% in our study that was due to the use of blood thinners [2].

The comparison of knowledge sources, personal experiences, and attitudes towards epistaxis management across studies reveals intriguing disparities and highlights the importance of assessing public knowledge and attitudes on this critical topic. In Alyahya et al., study, the respondents' primary source of knowledge regarding epistaxis first aid management was self-taught (53.7%), followed by medical books (23.3%) [13]. However, in our study the main source of information was relatives and friends (34.6%) followed by TV and social networking sites (18.6%), during study (13.9%), consultations with doctors (9.5%), and participation in educational seminars and courses (7.6%). In another Saudi study in Aseer region, TV and social media was source of information among 28.9% of general population followed by seminars (22%) and relatives or friends (18%) [14]. Haymes and Harries examine the quality of advice offered in YouTube videos on the epistaxis conservative management. Since many of the videos on YouTube provide incorrect and risky alternative advice, they do not advise using it as a source of patient information [15].

About 58.9% of our participants had experienced nosebleeds while a total of 85.67% of Saudi medical students reported experiencing epistaxis or seeing nasal bleeding throughout their lifetime [13]. Around 60.2% of our participants believed first aid was necessary during epistaxis. This finding was comparable with 64% of Saudi medical students who hold the belief that epistaxis should be classified as an emergent medical condition [13] but was lower than the result reported by 87.8% and 78.8% of Saudi general population in Aseer and Makkah regions respectively who agreed the importance of epistaxis first aid management [14,16].

The overall knowledge score of our participants was fair with around 60% reported good knowledge. Detailed knowledge revealed that 51.4% and 45.2% knew that applying pressure on the nose and the optimal forward head positioning could stop bleeding respectively. Similar results of 55.5% and 46.5% respectively were reported among Saudi general population in Makkah region [16]. In a Canadian health needs assessment study among healthcare providers, only minority of each group (i.e., 8% of ED nurses, 19%

of family physicians, 24% of residents, and 43% of EM physicians), answered correctly when asked about the site for applying compression and just over half (54–62%) of participants correctly positioned the patient's head [8]. On the other hand, few research has shown that around 80% of respondents were aware of the proper procedure. However, because these investigations were done on medical students, it was anticipated that they would have more expertise [13,17]. Much lower knowledge was reported by Saleem et al. in their study among Saudi general population where only 11.3% recognized that applying pressure could control epistaxis, 5.6% knew where to correctly press, and 4.8% knew correctly forward head positioning [6].

The exploration of how sociodemographic factors intersect with knowledge levels and attitudes regarding epistaxis first aid management offers valuable insights, yet the contrasting results between studies underscore the complexity of these associations among different populations and regions, highlighting the multifaceted nature of public understanding and attitude and forwarding the need for targeted educational initiatives to improve public knowledge and attitudes towards epistaxis first aid.

In our study, gender, age, marital status, and monthly income did not exhibit statistically significant associations with knowledge or attitude scores. In contrary to our findings, a recent Saudi study found that the total knowledge score was significantly affected by age and gender (P<0.001 and P=0.04, in order), but not when being exposed to nasal bleeding [18]. Also, gender and marital status were significantly affecting the total knowledge, attitude, and practice scores among Saudi general population (P=0.001 and 0.029, in order) [19].

Our findings revealed that participants with university/higher education, employed in the health sector, and previous experience with nosebleeds were more knowledgeable and more likely to have positive attitudes as compared to others. Contrary to our results, Alhejaily et al., found no discernible association between level of educational and varying knowledge of the etiology and management of epistaxis case [2].

Shosho et al., agreed with our results in that healthcare workers and those with a history of epistaxis showed greater odds of good knowledge compared to their counterparts, but they disagreed with our results regarding the significant gender association as they reported higher odds of good knowledge among females [16].

Study limitations

It is important to consider the limitations of the study when evaluating the findings and considering their broader implications. Assessing causal inferences using the cross-sectional design is challenging. Possible sampling bias with the snowball non-random sampling method and possible selection bias with data collection through the web-based survey as they relied on a questionnaire distributed via social media which predominantly captures responses from individuals with internet access and social media users. These may impact the representativeness of the sample. The self-reported nature of the data may also lead to recall and social desirability biases, impacting the accuracy of responses. Participation was restricted only to the population in Najran region with underrepresentation of older adults and aged and overrepresentation of young adults and people with higher education that might affect the generalizability of findings. Furthermore, while the study examines the impact of sociodemographic factors on epistaxis knowledge and attitudes, it may not have considered all relevant variables that could influence these outcomes, as seen in the variations with other studies. Additionally, the study's findings may not be broadly generalizable due to regional variations in epistaxis management and potential cultural influences.

The study showed fair knowledge and attitude of the Najran region's general adult population towards epistaxis first aid management. Higher ORs for knowledge and attitude scores were found among those with university/higher education, those employed in the health sector, and those with previous experience with nosebleed than others. It emphasizes the need for educational initiatives, especially for those with lower education, non-health sectors, and not experienced nosebleeds, to improve public first aid knowledge and attitudes towards epistaxis management. The study also highlights the complexity of factors influencing epistaxis management, with sociodemographic variables showing varying associations.

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Author Contributions

AAA: conceptualization; validation; preparation; methodology; project administration; resources investigation; software; formal analysis; data curation; writing—original draft; writing—review and editing. INA, STA, SSA, NOA : conceptualization; validation; preparation; methodology; resources investigation; data curation; writing—original draft. MON: validation; methodology; software; formal analysis; data curation;

writing—original draft; writing—review and editing. All authors read and approved the final manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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