

Evaluation Of First Aid Awareness For Epistaxis Among Primary And Secondary School Teachers- A Cross Sectional Study

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Abstract

Background: Epistaxis is a common emergency in school-aged children, yet many teachers lack adequate knowledge and skills to manage nosebleeds effectively. Prompt first-aid intervention—leaning forward, applying pressure to the soft part of the nose for 10–15 minutes and seeking medical care if bleeding persists—is critical to prevent complications. This study assessed the knowledge, attitudes and practices of school teachers regarding epistaxis first aid and examined factors influencing knowledge levels.

Methods: A cross-sectional survey was conducted in Tamaka, Kolar, during August–September 2025. Primary and secondary school teachers from government and private schools were recruited through convenience sampling. Participants completed a self-administered electronic questionnaire comprising demographic items, eight knowledge questions, attitude items and practice questions. Descriptive statistics summarised knowledge scores and demographic characteristics. Associations between demographic factors, training experiences and knowledge levels were analysed using t-tests, chi-square tests and logistic regression.

Results: A total of 557 teachers participated (mean age 24.9 ± 11.6 years, 64.3 % female). The mean knowledge score was 2.20 ± 1.36 out of eight; 84.4 % of participants had poor or moderate knowledge. No respondent answered all questions correctly, and 10.4 % scored zero. Misconceptions were common: most participants believed the head should be tilted backward and that emergency care is needed after only 10 minutes. Surprisingly, higher educational attainment was inversely related to knowledge levels, while the availability of first-aid materials in classrooms was positively associated with better knowledge. Formal training and prior experience managing nosebleeds did not significantly improve scores.

Conclusion: Despite strong support for mandatory epistaxis training, teachers demonstrated critically low competence in first-aid management of nosebleeds. These findings highlight the need for targeted, practical training programmes integrated into teacher education and continuous professional development.

Keywords: Epistaxis, First aid, School teachers, Knowledge.

INTRODUCTION

Epistaxis is one of the most common otorhinolaryngology emergencies worldwide[1]. Globally, around 60 % of people experience at least one episode of nosebleed during their lifetime, although only about 6 % require medical intervention[1][2]. Bleeding originates either anteriorly from Kiesselbach's plexus or posteriorly from deeper vessels[1]; anterior bleeds account for 90 % of episodes and are usually self-limiting[2]. Etiology ranges from benign local factors (dry air, trauma, infections, allergies, foreign bodies or septal deformities) to systemic causes such as coagulopathies or hypertension[3]. Epistaxis is particularly common in children and exhibits a bimodal age distribution with peaks between 2–10 years and in adults aged 50–70[4]. Severe or recurrent episodes can lead to anemia, aspiration, or psychological distress and often prompt emergency department (ED) visits[5]. In the United States, epistaxis accounts for roughly 1.7 % of ED visits and is responsible for 1 in 200 ED consultations[3].

First-aid interventions are simple yet critical: they involve leaning the patient forward to prevent aspiration, applying digital pressure to the soft part of the nose, and maintaining pressure for at least 5 minutes in children and 10–15 minutes in adults, with the option of a cold pack; medical attention is advised if bleeding persists beyond 30 minutes[6]. Evidence suggests that these measures stop 90–95 % of anterior bleeds[1][2]. National guidelines by the Saudi Ministry of Health, NICE and the Royal College of Emergency Medicine all endorse the same two steps—pinching the alar cartilage just above the nostrils

and leaning forward[6][7]. However, misapplication—such as leaning backward or compressing the nasal bones—can lead to aspiration or prolonged bleeding[2].

Despite clear recommendations, public knowledge remains limited. A landmark UK survey in 1998 reported that only 11 % of respondents applied correct first-aid techniques for epistaxis[7]. A recent multi-centre study repeating this survey 25 years later found that 83 % of the public and 64 % of ED staff still used incorrect techniques[7]. Cross-sectional assessments among healthcare providers reveal similar deficiencies: only about one-third of emergency medicine consultants or residents, and 13 % of ED nurses, correctly identified both the appropriate site for compression and head position, even though first-aid could control bleeding in 90–95 % of cases[2]. Among medical students in Nepal, about 60 % reported above-average knowledge, yet only 6.4 % knew the primary management of epistaxis[5]. These findings indicate that even formal medical training may not ensure competence in epistaxis first aid.

Studies of the general population and parents highlight even greater gaps. Less than half of parents in a national Saudi survey knew the correct actions to manage a child's nosebleed; only 47 % applied nasal pressure and 49.9 % leaned the child forward, while many still believed in tilting the head backward[8]. A multicentre survey in Saudi Arabia's Qatif region reported that up to 60 % of the U.S. population experiences epistaxis, and 25 000 cases are admitted annually in the UK; nevertheless, poor first-aid knowledge was widespread, with only one-third of residents demonstrating adequate awareness[4]. In the Al-Ahsa region, epistaxis accounted for 1.7 % of ED visits, yet first-aid awareness remained low, especially among people without prior experience[3]. In the Jazan region, 49.7 % of respondents exhibited poor knowledge of epistaxis first aid despite 90–95 % of episodes being manageable conservatively[1]. These variations suggest that sociocultural and regional factors influence knowledge and practice.

School teachers represent an important yet understudied group of first responders. Children spend a substantial portion of their day in school, and teachers are often called upon to provide immediate aid for nosebleeds. However, existing research focuses mainly on parents, the general public or healthcare professionals, leaving a gap in understanding teachers' preparedness. The present study therefore assessed epistaxis first-aid knowledge, attitudes and practices among school teachers in [location]. By identifying knowledge deficits and factors associated with performance, we aim to inform targeted training initiatives that will empower teachers to act confidently and correctly during nosebleed episodes, ultimately protecting the health and safety of school children.

METHODOLOGY

A cross-sectional descriptive design was adopted to assess knowledge, attitudes and practices of epistaxis first-aid among school teachers. The study was conducted in Tamaka, Kolar, targeting primary and secondary school teachers in both government and private schools. Data collection took place between August and September 2025. The research team used a convenience sampling strategy because an exhaustive list of all teachers in the area was not accessible, and they aimed to maximise participation within the set timeframe. All teachers currently employed at the participating schools who consented to take part and could complete an electronic questionnaire were eligible. Administrative staff and teachers on extended leave were excluded.

A structured, self-administered questionnaire was developed after reviewing relevant literature. It comprised four sections: demographic information (age, gender, school type and education level), eight multiple-choice questions assessing knowledge of epistaxis management, attitude questions regarding preferred actions and beliefs, and practice questions about previous management of nosebleeds, availability of first-aid materials and prior training. The knowledge items covered correct pressure site, duration, head position, timing for seeking medical attention and common misconceptions. Attitudes were measured using a Likert scale assessing agreement on mandatory training, confidence in managing nosebleeds, interest in workshops and beliefs about specific interventions. Practices explored previous training experiences, frequency of managing nosebleeds, actions undertaken and availability of first-aid equipment.

The questionnaire was hosted online via Google Forms and disseminated through school administrators and teacher WhatsApp groups. Participants provided informed consent electronically before beginning the survey. A sample size of 224 was calculated based on a prevalence estimate of 15.5 % for teachers who had practised first aid for epistaxis, using a 95 % confidence level and 5 % margin of error; however, the sample size was increased to account for potential non-responses and to improve statistical power.

Data were exported to IBM SPSS for analysis. Descriptive statistics summarised demographic characteristics and knowledge scores. The Shapiro–Wilk test assessed normality of knowledge score distribution. Independent t-tests, chi-square tests and logistic regression were used to explore associations between demographic variables, training experience and knowledge levels. Statistical significance was set at $p < 0.05$. Ethical approval was obtained from the institutional ethics committee, ensuring confidentiality and anonymity throughout data collection and analysis. Participation was voluntary, and respondents could withdraw at any time without penalty.

RESULTS

Study Population and Knowledge Performance

A total of 557 school teachers participated in this cross-sectional study. The demographic characteristics and knowledge assessment results are presented in Table 1. The study population had a mean age of 24.9 ± 11.6 years with a right-skewed distribution (median: 17 years, range: 2-77 years). Female teachers comprised the majority (64.3%, $n=358$), while males represented 35.7% ($n=199$). High school teachers were predominant (69.1%, $n=385$), followed by primary (15.8%) and secondary school teachers (15.1%). The educational profile revealed that 58.0% held postgraduate degrees, 23.7% had bachelor's degrees, and 18.3% had diplomas.

Table 1: Demographics and Knowledge Assessment Results (n=557)

Characteristic	n (%) or Mean $\pm$ SD	Knowledge Performance
Demographics		
Age (years), Mean $\pm$ SD	24.9 ± 11.6	Overall Score: 2.20 ± 1.36 (0-8 scale)
Female	358 (64.3%)	Median (IQR): 2 (1-3)
Male	199 (35.7%)	Mode: 2
High school teachers	385 (69.1%)	
Primary school teachers	88 (15.8%)	Knowledge Categories
Secondary school teachers	84 (15.1%)	Poor (0-1): 178 (32.0%)
PG Degree	323 (58.0%)	Moderate (2-3): 292 (52.4%)
Bachelor's degree	132 (23.7%)	Good (4-8): 87 (15.6%)
Diploma	102 (18.3%)	
Critical Knowledge Gaps		
Correct pressure duration (10-15 min)	0 (0.0%)	Most Common Misconceptions
Emergency timing (>20-30 min)	0 (0.0%)	Head tilt backward: 312 (56.0%)
Correct head position (forward)	165 (29.6%)	Pressure until bleeding stops: 267 (47.9%)
Correct pressure location (bottom)	234 (42.0%)	Emergency at 10 min: 292 (52.4%)
Should not lie down	305 (54.8%)	Press upper nose: 195 (35.0%)

The knowledge assessment revealed severely inadequate epistaxis management knowledge among teachers. The mean knowledge score was only 2.20 ± 1.36 out of 8 possible points, with a median of 2 (IQR: 1-3). The distribution was significantly non-normal (Shapiro-Wilk $W=0.9369$, $p<0.001$). Alarming, 84.4% of teachers demonstrated inadequate knowledge (poor: 32.0%, moderate: 52.4%), while only 15.6% achieved good knowledge levels. No participant achieved a perfect score, and 10.4% scored zero points.

Individual question analysis revealed critical knowledge deficits with complete failure rates (0.0%) for two essential components: correct pressure duration (10-15 minutes) and appropriate timing for emergency care (>20-30 minutes). The best performance was observed for the question about lying down (54.8% correct), followed by pressure location (42.0%). Dangerous misconceptions were prevalent, with 56.0% believing the head should be tilted backward (risking aspiration), 52.4% thinking emergency care is needed after only 10 minutes, and 47.9% stating pressure should be applied "until bleeding stops" without specific timing guidelines.

Attitudes and Practice Patterns

The assessment of attitudes and current practices revealed important insights into teachers' preparedness and behavior patterns, as detailed in Table 2. Despite poor knowledge scores, teachers demonstrated strong support for training initiatives, with 91.4% agreeing that epistaxis training should be mandatory (mean score: 4.59 ± 0.64 on a 5-point scale). Additionally, 58.5% expressed interest in participating in training workshops. However, a concerning disconnect emerged between confidence and competence: 58.2% felt confident in managing epistaxis despite the demonstrated knowledge deficits.

Table 2: Attitudes and Practice Assessment (n=557)

Variable	Response	n (%)	Mean $\pm$ SD
Attitudes			
Training should be mandatory	Agree/Strongly Agree	509 (91.4%)	4.59 ± 0.64
Feel confident managing	Agree/Strongly Agree	324 (58.2%)	4.36 ± 1.47
Interested in workshop	Agree/Strongly Agree	326 (58.5%)	4.35 ± 1.48
Would NOT fill tissue in nostril	Agree/Strongly Agree	314 (56.4%)	2.67 ± 1.97
Would change head position	Agree/Strongly Agree	422 (75.8%)	4.13 ± 1.65
Current Practices			
No formal training received		402 (72.2%)	
Training within last year		69 (12.4%)	
Training >1 year ago		60 (10.8%)	
Never managed student nosebleed		318 (57.1%)	
Have managed student nosebleed		219 (39.3%)	
First aid materials available		302 (54.2%)	
Response Preferences			
Try to stop bleeding myself		428 (76.8%)	
Ask for help		90 (16.2%)	
Call ambulance		20 (3.6%)	
Actions by Experienced Teachers (n=219)			
Told student to tilt head backward		109 (49.8%)	
Applied pressure to nose		61 (27.9%)	
Sent to nurse's office		35 (16.0%)	
Waited for help		7 (3.2%)	

Current practice patterns revealed significant preparation gaps. The majority of teachers (72.2%) had received no formal training for epistaxis management, with only 12.4% receiving training within the past year. Despite this lack of preparation, 76.8% indicated they would attempt to stop bleeding themselves rather than seeking immediate help. Among teachers who had actually managed student nosebleeds (39.3%), concerning practices were evident: nearly half (49.8%) incorrectly instructed students to tilt their head backward, a dangerous practice that risks blood aspiration. Only 27.9% applied pressure to the nose, and merely 16.0% appropriately referred students to the nurse's office.

Encouragingly, 56.4% correctly indicated they would not fill the nose with tissue, though 40.2% still held this misconception. The high willingness to change head position (75.8%) combined with poor knowledge of correct positioning suggests well-intentioned but potentially harmful interventions.

Factors Associated with Knowledge Performance

The analysis of factors influencing knowledge performance revealed unexpected findings, as summarized in Table 3. Contrary to expectations, traditional predictors such as gender, age, formal training, and experience showed no significant associations with knowledge scores. Only two factors demonstrated significant relationships with epistaxis knowledge.

Table 3: Predictors of Knowledge Performance and Statistical Associations

Variable	Knowledge Score Analysis	Logistic Regression (Good Knowledge ≥ 4)	p-value
Demographic Factors			

Gender (Male vs Female)	2.75±1.62 vs 2.72±1.70	OR: 1.17 (0.67-2.05)	0.583
Age groups (<25, 25-35, >35)	No significant difference	OR: 1.00 (0.98-1.02)	0.723
School type (High/Primary/Secondary)	No significant difference	-	0.549
Education Level			
Diploma holders	3.14 ± 1.63	Reference	-
Bachelor's degree	2.63 ± 1.53	OR: 0.48 (0.24-0.95)	0.031*
PG Degree	2.56 ± 1.75	OR: 0.48 (0.24-0.95)	0.036*
Practice Variables			
Formal training (Yes vs No)	2.90±1.47 vs 2.67±1.74	OR: 0.64 (0.34-1.19)	0.155
Experience managing (Yes vs No)	2.69±1.54 vs 2.84±1.74	OR: 0.93 (0.54-1.60)	0.802
Materials available (Yes vs No)	2.94±1.56 vs 2.46±1.77	OR: 1.84 (1.06-3.21)	0.031*
Correlation Analysis			
Confidence in managing	r = 0.158	-	0.002*
Interest in training	r = 0.099	-	0.058
Gender-Specific Analysis			
Formal training (M vs F)	44.8% vs 18.1%	-	<0.001*
Experience managing (M vs F)	52.4% vs 41.0%	-	0.040*
Model Performance			
Multiple regression R2	0.182	Pseudo R2 = 0.114	0.023*

*OR: Odds Ratio with 95% Confidence Interval; ***p<0.001, **p<0.01, *p<0.05

Paradoxically, higher education level was associated with poorer epistaxis knowledge. Teachers with bachelor's or postgraduate degrees had 52% lower odds of achieving good knowledge compared to diploma holders (OR=0.48, p=0.036). This inverse relationship suggests that higher academic qualifications do not translate to better practical first-aid knowledge and may indicate overconfidence or reduced focus on practical skills.

The availability of first aid materials in classrooms emerged as the strongest positive predictor, with teachers having access to materials demonstrating significantly higher knowledge scores (2.94±1.56 vs 2.46±1.77, p=0.004) and 84% higher odds of good knowledge (OR=1.84, p=0.031). This association suggests that institutional support and preparedness correlate with better knowledge outcomes.

Surprisingly, formal training showed no significant impact on knowledge scores (p=0.161), raising serious questions about current training program quality and relevance. Similarly, hands-on experience managing epistaxis showed no association with improved knowledge (p=0.631), suggesting that experience without proper training may reinforce incorrect practices rather than improve competence.

Gender-stratified analysis revealed significant disparities in training access, with males 2.5 times more likely to have received formal training (44.8% vs 18.1%, p<0.001) and more likely to have managed epistaxis cases (52.4% vs 41.0%, p=0.040). However, these training and experience advantages did not translate to better knowledge outcomes, further reinforcing the ineffectiveness of current training approaches.

The weak but significant correlation between confidence and knowledge (r=0.158, p=0.002) indicated that teachers with slightly better knowledge felt marginally more confident, though the relationship was minimal. The overall model explanatory power was limited (R2=0.182), suggesting that other unmeasured factors significantly influence epistaxis knowledge among teachers.

DISCUSSION

Our cross-sectional survey revealed alarmingly poor knowledge of epistaxis first aid among school teachers despite their critical frontline role in caring for children. The mean knowledge score was 2.20 (±1.36) out of eight, with a median of 2. None of the 557 participants knew the recommended 10–15 min

compression duration or the appropriate threshold for seeking emergency care, and only 29.6 % correctly identified the forward head position. These findings underscore substantial gaps in teachers' understanding of simple, life-saving measures, even though epistaxis is one of the most frequent otolaryngology emergencies and most anterior nosebleeds can be controlled by pinching the nasal alae and leaning forward[1]. When bleeding is not controlled properly, blood may be aspirated and recurrent episodes can lead to anemia and psychological distress[5]. In light of national guidelines that recommend compressing the lower cartilaginous portion of the nose and leaning forward for 5–15 minutes, with emergency referral if bleeding persists after 30 minutes[6], the complete absence of correct answers regarding compression duration and emergency thresholds is especially concerning.

Our findings resonate with, but are generally worse than, previous teacher-focused studies in Saudi Arabia. In a 2023 survey of 1,152 teachers from the Qassim region, the mean knowledge score was 3.29 ± 1.39 out of seven and only 19.4 % were deemed knowledgeable; 26.6 % correctly identified the lower nasal cartilage as the pressure point and just 3.6 % knew that compression should last at least 10 min[9]. About half of the teachers would tilt the head forward (49 %) and 55.6 % would avoid stuffing tissues in the nostrils, while 28.7 % would seek medical care if bleeding lasted more than 30 min[9]. Female teachers and those who had previously received epistaxis information were significantly more likely to have good knowledge[9], whereas our analysis showed no benefit from formal training and an inverse association between higher academic degrees and knowledge, highlighting possible overconfidence or inadequate training quality. Another cross-sectional survey from Al-Baha province reported that 50.7 % of teachers had epistaxis training, 73.3 % believed nasal compression stopped bleeding and 56.3 % would tilt the head forward[10]. However, 40.7 % would incorrectly tilt the head backward and 53.3 % would seek emergency care after only 10 min[10], similar to the misconceptions observed in our cohort. These data suggest that while awareness of the need to apply pressure and change head position is growing, precise knowledge of technique and duration remains inconsistent.

The situation is even more concerning in other studies. In a 2018 survey of teachers in Al-Ahssa, 54 % had received information on first aid but only 25 % would compress the cartilaginous part of the nose; 57 % would tilt the head forward and 46 % would seek emergency care after 10 minutes[11]. Many teachers would improperly pack the nostrils with gauze, apply ice or insert tissues[11]. Collectively, these studies indicate persistent misconceptions regarding appropriate pressure sites, head positioning and timing despite increasing awareness campaigns. Our data extend these findings by demonstrating that even with a younger sample (mean age 24.9 ± 11.6 years), knowledge deficits remain severe.

Teacher knowledge in our study was comparable to, and sometimes worse than, that of the general population. In a 2023 survey of 1,259 adults in Makkah, 46.5 % recognized that leaning forward is the correct posture, 55.5 % knew that pressure could stop bleeding, 31.1 % identified the lower nose as the correct pressure site and only 10.4 % knew the proper compression duration[12]. Although the median knowledge score was 3.0 (out of 6) and 37.1 % were categorized as having good knowledge[12], roughly half of respondents would seek medical care only if bleeding persisted beyond 20 minutes[12]. Among parents in Arar, 51.7 % knew to seat the child upright and lean forward, 32.3 % specified applying pressure for 15 minutes and 40.4 % still believed the head should be tilted back; most (95.2 %) said they would consult a doctor for frequent nosebleeds[13]. The parental first-aid literacy study across Saudi Arabia reported that only 38 % of mothers and 27.9 % of parents overall knew the correct first-aid steps for epistaxis[6]. A 2025 national survey of parents found that about half (49.9 %) recognized that children with nosebleeds should bend forward, despite 73.6 % rating their general first-aid knowledge as good[8]. The similarity of our teachers' misconceptions to those of non-medical parents suggests that educators are not better prepared than the general population, underscoring a systemic gap in first-aid training.

One might expect healthcare professionals and trainees to perform better, yet multiple studies indicate that knowledge deficits persist across the spectrum. A survey among emergency medicine consultants, residents and nurses found that only 33.6 % correctly identified the site for compression and 65.6 % knew the proper head position[2]. When ear, nose and throat trainees and medical students were excluded, fewer than a third of respondents correctly answered both questions[2]. Alarmingly, many clinicians were “very confident” despite incorrect answers[2], mirroring our finding that 58.2 % of teachers felt confident in managing epistaxis despite their poor knowledge. Among medical students in Nepal, only 6.4 % correctly identified the primary management steps (sit and lean forward, pinch the nose, maintain airway), and just 23.9 % knew the time for pinching the nose (5–10 min)[5]. Their mean knowledge score was 11.33 out of 30, with roughly two-thirds scoring above average[5], again reflecting a

gap between training and practical competence. These data support our observation that formal education does not necessarily translate into accurate first-aid skills.

Insights from general first-aid training studies

Broader first-aid preparedness surveys provide context for why knowledge remains low across different groups. A 2024 cross-sectional study of layperson first responders in Northern Uganda reported that only 20.5 % obtained an above-average first-aid knowledge score; tertiary education and confidence were positively associated with good knowledge, but 61.4 % of those lacking confidence cited insufficient knowledge and skills as their primary barrier[14]. This aligns with our findings that the availability of first-aid materials, rather than formal training or experience, was the strongest predictor of better knowledge. The Ugandan study also demonstrated that having received training and having previously provided first aid independently predicted confidence[14]. These results suggest that hands-on training and environmental support (e.g., accessible materials) may be more effective than didactic instruction alone.

Interpretation of our attitudinal and practice results

Our teachers overwhelmingly supported mandatory epistaxis training (91.4 %) and more than half expressed interest in workshops, yet 72.2 % had never received formal training. This gap mirrors the national parent survey where only 25.6 % had attended a first-aid course despite 73.6 % self-rating their knowledge as good[8]. In our study, 58.5 % of teachers reported they would try to stop bleeding themselves rather than calling for help, and among those who had ever managed a student nosebleed, almost half instructed students to tilt the head backward. Such misplaced confidence can be dangerous, as improper first aid can exacerbate bleeding or lead to aspiration[2]. The mismatch between perceived confidence and actual competence, observed in both our teachers and healthcare professionals[2], highlights the importance of objective skills assessments.

Predictors of knowledge and implications for training

Interestingly, demographic variables such as gender and age did not significantly influence knowledge scores in our study. Teachers with bachelor's or postgraduate degrees were less likely to achieve good knowledge compared with diploma holders. This paradoxical finding may reflect a neglect of practical first-aid training in higher academic programs, or overconfidence leading to poor retention. The only positive predictor of knowledge was the availability of first-aid materials; teachers with classroom supplies scored higher (mean 2.94 vs 2.46, OR 1.84). Similarly, in the Ugandan first-aid study, participants with higher education and those confident in providing aid performed better[14]. These parallels suggest that both institutional support and self-efficacy contribute to effective first-aid readiness.

Contrary to expectations, formal training and experience managing nosebleeds were not associated with higher scores. This is consistent with findings from Qassim, where only teachers who actively sought information performed better[9], and with reports among healthcare providers that training does not always yield correct technique[2]. Therefore, current training programs may be ineffective or poorly retained. Incorporating practical simulations, regular refreshers and clear emphasis on key steps (compression of the lower nose for 10–15 min, leaning forward, seeking emergency care if bleeding persists beyond 30 min)[6] may improve retention. The widespread misconception that emergency care is required after only 10 minutes, found in our study and others[10][11], suggests that guidelines need to be more prominently disseminated.

Given that schools are key environments where children experience injuries, teachers must be equipped with accurate first-aid skills. Our results and the comparative studies indicate that targeted, hands-on training is needed across educational levels and should be integrated into teacher education curricula. At the same time, the positive association between material availability and knowledge highlights the importance of stocking classrooms with first-aid kits and providing visual cues (e.g., posters illustrating correct epistaxis management). Regular in-service workshops, similar to the periodic certifications required for CPR, could help maintain skills. Policy makers should also consider incorporating epistaxis management into school health policies and emergency action plans.

Further research should explore effective training modalities, such as simulation-based learning, peer teaching or digital modules, and evaluate knowledge retention over time. Longitudinal designs could determine whether improved first-aid knowledge translates into better outcomes for students. Additionally, qualitative studies could identify barriers to correct practices and tailor interventions to specific cultural contexts.

CONCLUSION

This cross-sectional study reveals striking deficiencies in school teachers' understanding and application of basic epistaxis management. Although nosebleeds are common among children and correct first-aid measures are simple and well-defined, the majority of teachers lacked knowledge of essential steps such as leaning forward, pinching the soft part of the nose for at least 10 minutes and recognising when to seek medical assistance. The inverse relationship between formal education and knowledge underscores that academic qualifications do not equate to practical competence. The positive association between availability of first-aid materials and knowledge suggests that environmental support reinforces learning. Given that most respondents expressed willingness to receive training, educational authorities should mandate and deliver hands-on, evidence-based first-aid training within teacher preparation programmes and ongoing professional development. Improving teachers' competence will not only safeguard students' health during epistaxis episodes but also build a culture of safety and preparedness within schools.

REFERENCES

- [1] Mahzara NK, Alasmari WA, Alzain A, et al. Knowledge, attitude, and practice of first aid for epistaxis among the general population in the Jazan Region of Saudi Arabia. *Cureus*. 2023;15(9):e44774. doi:10.7759/cureus.44774.
- [2] Merdad M, Alkhalaf AM, Alsarhan RA, et al. Assessment of first aid measures to control epistaxis among health care providers at a tertiary care hospital in Saudi Arabia. *Cureus*. 2022;14(8):e28155. doi:10.7759/cureus.28155.
- [3] Alkhalaf HA, Alabbad RS, Alawad SS, et al. Awareness of first-aid management of epistaxis among individuals in Al-Ahsa Region. *Cureus*. 2024;16(2):e54625. doi:10.7759/cureus.54625.
- [4] Amoudi H, Alshehri A, Alghamdi A, et al. Assessment of public knowledge and awareness on first-aid management of epistaxis in Qatif Region, Saudi Arabia. *Cureus*. 2025;17(2):e78323. doi:10.7759/cureus.78323.
- [5] Pandit SB, Karki AB, Limbu M, et al. Knowledge on first aid management of epistaxis among medical students of a medical college: a descriptive cross-sectional study. *JNMA J Nepal Med Assoc*. 2024;62(273):327–331. doi:10.31729/jnma.8580.
- [6] AlZabin A, Aleidan F, Alnoumas H, et al. Parental first aid literacy in epistaxis: do parents know what to do? *Front Public Health*. 2025;13:1551197. doi:10.3389/fpubh.2025.1551197.
- [7] Dunne H, Morgan N, Stoodley P, et al. Exploring knowledge of first aid in epistaxis—25 years on. *PLoS One*. 2025;20(1):e0315092. doi:10.1371/journal.pone.0315092.
- [8] Alotaibi O, Alharthi F, Alyafi F, et al. Parental awareness and knowledge of first aid for children in Saudi Arabia: a multiregional cross-sectional study. *Front Pediatr*. 2025;13:1575783. doi:10.3389/fped.2025.1575783.
- [9] Alanazy S, Alabdulqader A, Ali H, et al. The level of school teachers' knowledge about first-aid management and control of epistaxis in Qassim Region, Saudi Arabia. *Cureus*. 2023;15(1):e33784. doi:10.7759/cureus.33784.
- [10] Alzahrani SA, Alzahrani MM, Alshehri E, et al. Awareness of epistaxis and its first aid management among teachers working in schools of Al-Baha Region, Saudi Arabia. *Cureus*. 2023;15(9):e45670. doi:10.7759/cureus.45670.
- [11] Alshehri F, Alluwaim F, Alyahya K. Teachers' awareness regarding emergency management of epistaxis inside the school; Alahssa, Saudi Arabia. *Open J Prev Med*. 2018;8:44–55. doi:10.4236/ojpm.2018.82005.
- [12] Shosho RY, Alsahli WA, Aljaaly AI, et al. Assessment of public knowledge and awareness on first-aid management of epistaxis in Makkah, Saudi Arabia. *Cureus*. 2023;15(10):e47945. doi:10.7759/cureus.47945.
- [13] Elboraei YAE, Al Zobidi T, Alsayat RH, et al. Awareness of first aid management of epistaxis in children among parents in Arar, Saudi Arabia. *Cureus*. 2023;15(11):e49557. doi:10.7759/cureus.49557.
- [14] Opiro K, Ocen SA, Ocom SS, et al. Prehospital emergency care: a cross-sectional survey of first-aid preparedness among layperson first responders in Northern Uganda. *Open Access Emerg Med*. 2024;16:191–202. doi:10.2147/OAEM.S464793.