Tanzania Journal of Health Research
Volume 24, Number 4, October 2023
https://dx.doi.org/10.4314/thrb.v24i4.6

Awareness about first aid management of epistaxis among medical students of the State University of Zanzibar, Tanzania

Zephania Saitabau Abraham [1], Hafidh Mohamed [1], Aveline Aloyce Kahinga [2]

[1] *Department of Surgery, School of Medicine and Dentistry, University of Dodoma, Dodoma, Tanzania*
[2] *Department of Otorhinolaryngology, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania*

Abstract

Background: Epistaxis is the most common otorhinolaryngology emergency and can be unilateral or bilateral due to a variety of pathologies of the nose, paranasal sinuses, and nasopharynx. It tends to be self-limiting on most occasions. It may be severe enough to necessitate medical attention and lead to life-threatening complications when left without prompt intervention. There is a scarcity of published data regarding awareness of first aid management of epistaxis among medical students in Zanzibar, Tanzania, thus the study aimed to address such an existing gap.

Methods: This was an analytical cross-sectional study that recruited 395 medical students. Data was collected using semi-structured questionnaires and analysis was done by Statistical Package for Social Sciences (SPSS) version 23 and a p-value <0.05 was considered to be statistically significant.

Results: About two-thirds (89.4%) of the medical students had good knowledge of first aid management of epistaxis and 85.3% of the participants had a good attitude toward first aid management of epistaxis. Almost half of the respondents of this study (52.7%) had good practice regarding first aid management of epistaxis. A significant association was found between academic year and overall knowledge, attitude and practices on first aid management of epistaxis among medical students.

Conclusions: Medical students of the State University of Zanzibar were found to have adequate knowledge about first aid management of epistaxis thus empowering them to provide first aid management of epistaxis and also with good attitude and practices towards handling patients with epistaxis.

Keywords: Epistaxis, first aid, awareness, knowledge, medical students, Tanzania

Introduction

Epistaxis is one of the most common ear, nose and throat conditions encountered by primary care and emergency physicians and it is one of the otorhinolaryngological emergencies (Krulewitz & Fix., 2019; Abu-Zaid et al.,2020; Abraham et al., 2017). Epistaxis causes anxiety in both patients and healthcare providers (Alhejaily et al., 2019). Epistaxis exhibits a bimodal distribution pattern and affects up to 60% of the population in their lifetime, with 6% requiring medical attention (Gilyoma & Chalya., 2011; Almuhlim et al., 2017). Epistaxis ranges from mild to severe form and is considered a life-threatening condition when it occurs since its course remains unpredictable.

Corresponding author: Zephania Saitabau Abraham Email: zsaitabau@yahoo.com

Epistaxis has been causing a significant workload in accident and emergency departments and 66.7% of the population experience epistaxis during their lifetime (Alhejaily et al., 2019; Almuhlim et al., 2017). There are variable causes of epistaxis which can be local or systemic and the reported incidence varies from 10% to 60% of individuals (Faistauer et al., 2009). It is more common in males than females and shows an increasing incidence with age (Alhejaily et al., 2019; Almuhlim et al., 2017). The diagnosis of idiopathic epistaxis requires a careful history, physical examination, and laboratory workups to rule out any possible etiologies (Abraham et al., 2017; Varshney & Saxena., 2005). Though epistaxis is common among young adults and children and rare among neonates but reaches its peak in the sixth decade (Varshney & Saxena., 2005). Awareness of first aid management of epistaxis remains crucial not only in alleviating non-life-threatening episodes of epistaxis but also in lifesaving when epistaxis occurs in the absence of nearby healthcare facilities where efforts may be directed at preventing worsening of epistaxis thus reducing mortality and morbidity (Sowerby et al., 2021)

Despite its crucial importance, unfortunately, little is known about awareness of first aid management of epistaxis among medical students despite its high prevalence.[10] Studies from different parts of the world involving students in their various years of training have shown variable levels of knowledge, attitude and practises regarding first aid management of epistaxis a study that was done in Saudi Arabia reported that 74.6% of medical students considered epistaxis to be a medical emergency and also 87.1% of the medical students reported bleeding disorders to be the commonest cause of epistaxis (Al-Musa et al., 2017). Regarding the source of knowledge about first aid management of epistaxis, a study from Saudi Arabia found 53.6% of the medical students to have reported self-teaching as the main source of information on first aid management of epistaxis (Alyahya et al., 2019).

When the attitude of medical students is to be considered pertaining to first aid management of epistaxis, a study from Saudi Arabia found 75.3% of the medical students to have reported that if epistaxis cannot be stopped after 10-20 minutes upon direct nasal compression then it requires seeking of emergency medical care (Alyahya et al., 2019). Regarding various practices on first aid management of epistaxis, a study from Nepal found nasal packing to be the first line measure used by emergency clinical staff (Adhikari et al., 2006) while in Saudi Arabia, 34.3% of the medical students chose nose compression while 33.8% chose nasal packing as the first line measure in the management of epistaxis (Al-Musa et al., 2017) and both were non-surgical measures.

Even though there are several published studies on epistaxis in Tanzania, there is no study to date that has determined the awareness of medical students on first aid management of epistaxis despite the fact that medical students will be front liners in the management of epistaxis upon graduating and this study aims to explore the awareness of medical students on first aid management of epistaxis at the State University of Zanzibar which is the largest public University in Zanzibar.

Methods

Study design, area and study duration

A university-based cross-sectional study underpinned by a quantitative approach was conducted at the State University of Zanzibar from November 2021 to January 2022.

Sampling technique, sample size and study population

The convenience sampling technique was utilized to recruit three hundred and ninety-five medical students upon consenting to participate.

Sample size estimation

The sample size for this study was calculated using the following formula;

$$N = \frac{Z^2 P(1-P)}{E^2}$$

Where;
n = sample size
z= standard normal deviate 1.96 for 95% confidence level
p = prevalence, p ~ 64% of medical students reported epistaxis as an emergency case (Alyahya et al., 2019).
E= margin of error which is 5%
Therefore,
$N= 1.96^2 \times 0.64 (1-0.64) / 0.05^2 = 354.04 \sim 354$
The minimum estimated sample size was 354
Adjusting for non-response rate (f% assumed to be 10%) (Smith and day-1984)
Then
N'=N x adjusted factor (100%/100%-f %)
N'=354 X (100%/100%-10%) =393
Therefore, the adjusted required sample size was 393 medical students though 395 medical students were recruited in this study.

Inclusion criteria
All medical students who consented to participate in the study and who were present during the data collection

Exclusion criteria
Any medical student who was found to have been transferred from another university in less than one year by the time of data collection

Data collection tools
A structured questionnaire adapted from previously published studies and thereafter modified accordingly to fit the current study was used to collect the relevant data (Al-Musa et al., 2017; Alyahya et al., 2019). The first and final version was prepared in English since the study participants were all conversant with English. The questionnaire comprised four parts: (i) Socio-demographic characteristics of the medical students, (ii) Knowledge of epistaxis among medical students (iii) Attitude on first aid management of epistaxis among medical students (iv) Practices on first aid management of epistaxis among medical students.

The questionnaire comprised both open and closed-ended questions. Self-administered questionnaires were employed to collect relevant data from the selected participants. The procedure included a self-introduction by one of the researchers who is the primary person who collected data from all three hundred and ninety-five medical students, and an introduction to the topic and purpose of the study. The researcher then requested their participation in the study.

Participants were assured of free participation and withdrawal from the study at any time if they wished to do so. Moreover, reviewing the literature as well as pilot testing the instrument prior to the study by involving 10% of the actual sample size from the State University of Zanzibar and who were then excluded from the actual study assessed the validity of the tool

Measurement of variables

 https://dx.doi.org/10.4314/thrb.v24i4.6

Dependent variable: The dependent variable for the study was awareness of first aid management of epistaxis where several parameters were assessed such as knowledge of epistaxis among medical students, attitude on first aid management of epistaxis, and practices on first aid management of epistaxis among medical students. To determine the level of knowledge on epistaxis among medical students, the total score was computed for the seven set questions where the correct answer was scored one point, and other responses were scored zero. Similarly, to assess attitudes on first aid management of epistaxis among medical students, five questions were set and the correct response was scored 1 point and other responses were scored zero. On the other hand, to assess practices on first aid management of epistaxis among medical students, eight questions were set where the correct response was scored 1 point and other responses were scored zero.

Independent variables: The independent variables for the study were the socio-demographic characteristics of the participants including the year of study.

Data processing and analysis

The collected data were cleaned and analyzed using the SPSS version 23 software package. Descriptive statistics were performed to present frequency distribution for socio-demographic characteristics, knowledge of epistaxis among medical students, attitude on first aid management, and practices on first aid management of epistaxis among medical students. A chi-square test was performed to establish the relationship between the selected independent and dependent variables. All the independent variables with p-values <0.05 were regarded to be statistically significant.

Rating scale type

The seven items on the knowledge dimension on epistaxis among medical students were assessed using a five-point Likert scale ranging from 1 to 5 (1=very unconfident, 2=fairly unconfident, 3=neutral, 4=fairly confident and 5=very confident). Higher scores represented better knowledge of epistaxis among medical students. The five items on the attitude on first aid management of epistaxis among medical students were evaluated on a five-point Likert scale ranging from 1 to 5 (1=very unconfident, 2=fairly unconfident, 3=neutral, 4=fairly confident and 5=very confident). Higher scores similarly represented better attitudes on first aid management of epistaxis among medical students. The eight items on practices on first aid management of epistaxis were evaluated on a three-point Likert scale ranging from 1 to 3 (1=don't know, 2=no, 3=yes). Higher scores indicated good first-aid management practices of epistaxis among medical students.

Ethical consideration

The study was submitted to the Directorate of Research, Publication and Consultancy of the University of Dodoma for ethical approval. The ethical committee assessed and gave the ethical approval for this study dated 22nd November 2021 under the approval number MA.84/261/02/. Furthermore, permission for conducting the research was obtained from the administration of the State University of Zanzibar. The individual informed consent both verbal and written was obtained from the study participants after they had been fully informed about the study goals and the process involved. The participants were ensured of privacy and confidentially. Anonymity was maintained by using the code number on the questionnaire instead of the participant's name. The participant had absolute freedom and right to withdraw from the study at any time.

https://dx.doi.org/10.4314/thrb.v24i4.6

Results

Socio-demographic characteristics of medical students

In this study, a total of 395 medical students were recruited where the majority were from the second year 118(29.9%) and the third year 122(30.9%), while the minority of 28(21.3%) were from the fifth year. Males, 311(78.7%) predominated in this study and females were 84(27%). The majority of the students belonged to the age group, 22-27 years (73.2%) and the least number of students were aged 28-33 years, 8(2.0%). Regarding marital status, the majority of the students were single, 367(92.9%) while 28(7.1%) were married **(Table 1).**

Table 1: Socio-demographic characteristics of medical students, (n = 395)

Socio-demographic characteristics	Sub variable	Frequency, n(%)
Gender	Male	311 (78.7)
	Female	84 (21.3)
Age (years)	16-21	98 (24.8)
	22-27	289 (73.2)
	28-33	8 (2.0)
Marital status	Married,	28 (7.1)
	Single	367 (92.9)
Academic year	First-year	96 (24.3)
	Second year	118 (29.9)
	Third year	122 (30.9)
	Fourth-year	31 (7.8)
	Fifth year	28 (7.1)

Knowledge of epistaxis among medical students

The majority of the medical students, 388(98.2%) ever had seen someone with a bleeding nose while 7 (1.8%) of them had never seen or encountered someone with epistaxis. Regarding the cause of epistaxis, 199(50.4%) reported bleeding disorders to be the commonest known causes of epistaxis followed by fingernail trauma, 113(28.6%) while 18(4.6%) don't know the cause of epistaxis. Regarding the proper position that a patient with epistaxis should be positioned, 319(80.8%) of the students knew the correct position which is sitting with the head tilted forward rather than backward but 41(11.6%) reported lying down with an ice pack over the nasal bridge. Similarly, 329(83.3%) medical students mentioned the cartilaginous part of the nose as the proper site to pinch the nose during epistaxis while 2(0.5%) mentioned the bony part. Regarding environmental causes of epistaxis, 337(85.4%) thought hot weather to be the cause of epistaxis while 47(11.9%) considered cold weather as the cause of epistaxis. (Table 2)

Table 2: Knowledge of epistaxis among medical students, (n=395)

Variable	Categories	Frequency, n(%)

 https://dx.doi.org/10.4314/thrb.v24i4.6

Ever experienced nose bleeding or seen someone with a bleeding nose	Yes	388 (98.2)
	No	7 (1.8)
The most common cause of epistaxis	Nasal bones fracture	29 (7.3)
	Fingernail trauma	113 (28.6)
	Bleeding disorders	199 (50.4)
	Hypertension	36 (9.1)
	I don't know	18 (4.6)
Proper position that a patient with epistaxis should be positioned	Sitting with head tilted forward	319 (80.8)
	Sitting with head tilted backward	16 (4.1)
	Lying down and elevate the legs	2 (0.5)
	Lying down with an ice pack over the nasal bridge	41 (10.4)
	I don't know	17 (4.3)
Duration for pinching the nose when having epistaxis	Less than 5 min	8 (2.0)
	5-10 min	18 (4.6)
	10-20 min	219 (55.4)
	More than 20 min	150 (38.0)
Ideal location to pinch the nose as a primary measure to stop epistaxis	Cartilaginous part(lower down)	329 (83.3)
	Bony part (higher up)	2 (0.5)
	Both	45 (11.4)
	I don't know	19 (4.8)
Other possible causes of epistaxis (may circle more than one correct response)	Hot weather	337 (85.4)
	Cold weather	47 (11.9)
	I don't know	11 (2.8)
Main source of knowledge regarding first aid management of epistaxis	Self-taught	334 (84.6)
	First aid course	2 (0.5)
	Mass media	1 (0.3)
	Observation of senior doctors	19 (4.8)
	Medical books/curriculum	30 (7.6)
	Guessing	3 (0.8)
	Workshops	5 (1.3)
	Others	1(0.3)

Overall knowledge of epistaxis management among medical students

A total score was computed for the seven sets of questions that were assessing knowledge, the correct answer was given one point, and other responses were given zero. Generally, in this study

 https://dx.doi.org/10.4314/thrb.v24i4.6

majority of the respondents (89.4%) had good knowledge while 10.6% had poor knowledge regarding epistaxis management.

Source of knowledge regarding first aid management of epistaxis among medical students

The main source of knowledge on first aid management of epistaxis was self-taught, 334(84.6%) followed by medical books/curriculum, 30(7.6%), and the first aid courses being the least source of knowledge, 2(0.5% **(Figure 1).**

Attitude on first aid management of epistaxis among medical students

In this study, 378(95.7%) medical students considered epistaxis to be one of the medical emergencies while only 6(1.5%) reported it not to be a medical emergency. Results regarding the attitude of seeking medical emergency care, 325(82.3%) medical students showed that persistent nose bleeding for more than 10–20 minutes with direct nasal compression seems to be considered mostly by medical students as an indicator for a patient with epistaxis to seek medical care 325(82.3%) followed by recurrent nasal bleeding more than four times per week despite all preventive measures, 215(54.4%), however direct nasal trauma 19(4.8%) was the least reason reported to seek medical emergency care. Similarly, 269(68.1%) medical students mentioned the method of pinching the nose again for 10–20 minutes more and reassessing after as a proper attitude if the patient continues to bleed in the emergency room after primary measures have been done, while 49(12.4%) considered to keep the patient under observation in the emergency room and reassess later. (Table 3)

Table 3. Attitude on first aid management of epistaxis among medical students, (n=395)

Variable	Categories	Frequency, n(%)
Whether epistaxis is considered to be one of the medical emergencies	Yes	378 (95.7)
	No	6 (1.5)
	I don't know	11 (2.8)
When should a patient with epistaxis seek emergency care	Persistent nose bleeding for more than 10–20 min with direct nasal compression	325 (82.3)
	Recurrent nasal bleeding more than four times per week despite all preventive measures	215 (54.4)
	Massive nasal bleeding	180 (45.6)
	After direct nasal trauma	19 (4.8)
	I don't know	20 (5.1)
What one should do if the patient continues to bleed from the nose in the Emergency Room after the primary measures have been done	Pinch the nose again for 10–20 min more and reassess after	269 (68.1)
	Refer the patient to an otolaryngologist to take further care	263 (66.6)

https://dx.doi.org/10.4314/thrb.v24i4.6

	Keep the patient under observation in Emergency Room and reassess later	49 (12.4)
	Don't know	27 (6.8)
Preferred way for breathing during epistaxis	Breath by using the nose as usual	7 (1.8)
	Mouth breathing	315 (79.7)
	Uses of both the nose and mouth	62 (15.7)
	Don't know	16 (4.1)
What to do if a patient with epistaxis get into shock	Examine the nose	85 (21.5)
	Compress the nose	39 (9.9)
	Put the patient in supine position with the head lowered	258 (65.3)
	Put the patient in supine position with the head backward	52 (13.2)
	Start anti shock treatment	232 (58.7)
	Nasal packing	61 (15.4)
	Don't know	35 (8.9)

Toward controlling nasal bleeding.

A total score was computed for the five-set questions that were assessing attitude among medical students where the correct answer was given one point, and other responses were given zero. Generally, in this study majority of the respondents (85.3%) had a good overall attitude while (14.7%) had a poor overall attitude regarding first aid management of epistaxis.

Practices on first aid management of epistaxis among medical students

The study has found 337(85.4%) medical students reported that nonsurgical treatment was the preferred modality of treating epistaxis while 31(7.8%) reported both nonsurgical and surgical treatment modalities. However, topical vasoconstrictors 268(67.8%) and anterior nasal packing 280(70.9%) were the most reported treatment modalities while the least reported method was the use of a Foley catheter 212(53.7%). Similarly, 177(44.8%) medical students thought electro cauterization was the third choice while 137(34.7%) thought it to be the second choice. (Table 4.0).

Table 4 Practices on first aid management of epistaxis among medical students, (n=395)

Variable	Categories	Frequency, n(%)
Preferred treatment modality for epistaxis	Non- surgical treatment	337 (85.4)
	Surgical treatment	2 (0.5)
	All of the above	31 (7.8)

 https://dx.doi.org/10.4314/thrb.v24i4.6

	I don't know	25 (6.3)
Preference of using topical vasoconstrictors only like adrenaline to stop nasal bleeding	Yes	268 (67.8)
	No	65 (16.5)
	I don't know	62 (15.7)
Preference of using nasal packing as an ideal method to control anterior nasal bleeding	Yes	280 (70.9)
	No	32 (8.1)
	I don't know	83 (21.0)
Whether silver nitrate cauterization is an ideal modality to arrest anterior epistaxis	Yes	233 (59.0)
	No	47 (11.9)
	I don't know	115 (29.1)
Whether use of Foley catheter for ballooning is still safe for treatment of posterior nasal bleeding	Yes	212 (53.7)
	No	67 (17.0)
	I don't know	116 (29.4)
Whether one would wish to use posterior nasal packing to arrest bleeding at the woodruff's plexus	Yes	224 (56.7)
	No	61 (15.4)
	I don't know	110 (27.8)
Preference choice for electro cauterization in treatment of uncontrolled epistaxis	First choice	24 (6.1)
	Second choice	137 (34.7)
	Third choice	177 (44.8)
	Don't know	57 (14.4)
Whether plastic surgery can be an option to control recurrent epistaxis	Yes	264 (66.8)
	No	23 (5.8)
	I don't know	108 (27.3)

Overall practices on first aid management of epistaxis among medical students

A total score was computed for eight set questions that assessed practices, the correct answer was given one point and other responses were given zero. Generally, in this study, almost half of the respondents (52.7%) had overall good practice while (47.3%) had overall poor practice regarding first aid management of epistaxis.

Association between academic year and overall knowledge on epistaxis first aid management

This study has found a significant association between the academic year of study and overall knowledge on first aid management of epistaxis of which the level of good knowledge was increased as the academic year of study increased, (p-value=0.039). (Table 5.0)

Table 5. The association between academic year and overall knowledge of first aid management of epistaxis, (n=395)

 https://dx.doi.org/10.4314/thrb.v24i4.6

		Overall knowledge of epistaxis		Total, n(%)	p-value
		Poor knowledge, n, (%)	Good knowledge, n, (%)		
Academic year	First-year	18 (18.8)	78 (81.3)	96 (24.3)	0.039
	Second year	12 (10.2)	106 (89.8)	118 (29.9)	
	Third year	9 (7.4)	113 (92.6)	122 (30.9)	
	Fourth-year	2 (6.5)	29 (93.5)	31 (7.8)	
	Fifth year	1 (3.6)	27 (96.4)	28 (7.1)	
	Total	42 (10.6)	353 (89.4)	395(100)	

Association between academic year and overall attitude on first aid management of epistaxis among medical students

The study has found a statistically significant association between academic year and overall attitude on first aid management of epistaxis since the desired good attitude was observed from the third year of study to the fifth year, their corresponding p-values are 0.000 (Table 6.0)

Table 6. The association between academic year and overall attitude on first aid management of epistaxis among medical students, (n=395)

		Overall attitude on first aid management of epistaxis		Total, n(%)	p-value
		Poor attitude, n, (%)	Good attitude, n, (%)		
Academic year	First-year	32 (33.3)	64 (66.7)	96 (24.3)	0.000
	Second year	16 (13.6)	102 (86.4)	118 (29.9)	
	Third year	10 (8.2)	112 (91.8)	122 (30.9)	
	Fourth-year	0 (0.0)	28 (100)	31 (7.8)	
	Fifth year	0 (0.0)	28 (100)	28 (7.1)	
	Total	58 (14.7)	337 (85.3)	395 (100)	

Association between academic year and overall practices on first aid management of epistaxis among medical students

There was a statistically significant association between the academic year of study and overall practices regarding first aid management of epistaxis among medical students. Good practices were observed from the third year of study, since the p-value=0.000 (Table 7.0)

Table 7. The association between academic year and overall practices on first aid management of epistaxis among medical students, (n=395)

 https://dx.doi.org/10.4314/thrb.v24i4.6

		Overall practices of epistaxis management		Total, n(%)	p-value
		Poor practices, n, (%)	Good practices, n, (%)		
Academic year	First-year	79 (82.3)	17 (17.7)	96 (24.3)	0.000
	Second year	65 (55.1)	53 (44.9)	118 (29.9)	
	Third year	34 (27.9)	88 (72.1)	122 (30.9)	
	Fourth-year	3 (9.7)	28 (90.3)	31 (7.8)	
	Fifth year	6 (21.4)	22 (78.6)	28 (7.1)	
	Total	187 (47.3)	208 (52.7)	395 (100)	

Discussion

Medical students are expected to be front liners in the management of patients with epistaxis upon graduating from medical school therefore assessing their awareness of the management of epistaxis remains of paramount importance in improving the quality of graduates who will be competent to serve the community at large upon completion of their doctor of medicine degree training. So far this is the first study in Tanzania to explore the awareness of medical students on first aid management of epistaxis.

Knowledge of first aid management of epistaxis among medical students

Regarding knowledge of epistaxis among medical students at the State University of Zanzibar, the Majority of the medical students (98.2%) considered epistaxis to be a medical emergency. Such findings appear to be similar to what was found in Saudi Arabia where 74.6% of medical students considered epistaxis to be a medical emergency (Al-Musa et al., 2017)

In our study, half (50.4%) of the medical students reported bleeding disorders to be the commonest cause of epistaxis followed by fingernail trauma (28.6%). Such findings appear to correlate with what was found in Saudi Arabia where 87.1% of the medical students reported bleeding disorders to be the commonest cause of epistaxis (Al-Musa et al., 2017).

Pertaining to the knowledge of the correct size for pinching the nose as a primary measure to arrest epistaxis, 83.3% of the medical students knew the correct site and that is the cartilaginous part of the nose, while 11.9% of them chose the incorrect site and 4.8% didn't know the exact site to pinch the nose. Such findings appear to be dissimilar to those found in several studies done elsewhere where few of the students knew the correct site for nose pinching which is the cartilaginous part (Sowerby et al., 2021; Al-Musa et al., 2017; Mugwe et al., 2014)

Regarding the source of knowledge about first aid management of epistaxis, 84.6% of the students reported self-teaching as the commonest source while the second commonest sources were curriculum/medical books (4.8%). Such finding appears to be similar to what was found by Alyahya et al. in Saudi Arabia where 53.6% of the medical students reported self-teaching as the main source of information on first aid management of epistaxis (Alyahya et al., 2019). Generally, the majority of the medical students (89.4%) in our study had good knowledge of first aid management of epistaxis.

Attitude on first aid management of epistaxis among medical students

The majority of the medical students (80%) identified the proper position that a patient with epistaxis should be positioned, which is tilting the head forward rather than backward. Such findings appear to be similar to those from Saudi Arabia where 80.6% of the medical students knew the same proper position in which a patient with epistaxis should be positioned (Al-Musa et al., 2017) and also depicted similarity from the study that was done in Kenya where 60% of the clinical staffs knew the correct position to position a patient with epistaxis (Mugwe et al., 2014).

Regarding the attitude of seeking emergency medical care during persistent epistaxis, 82.3% of the students showed that if bleeding continues after 10–20 minutes with direct nasal compression, then it implies the proper time to seek emergency care. Such finding appears to be similar to what was found in a study from Saudi Arabia whereby 75.3% of the medical students reported that if epistaxis cannot be stopped after 10-20 minutes upon direct nasal compression then it requires seeking emergency medical care (Alyahya et al., 2019).

Practices on first aid management of epistaxis among medical students

The study has found that 85.4% of medical students report non-surgical treatment as the preferred modality of treating epistaxis while 7.8% reported both non-surgical and surgical treatment modalities. Anterior nasal packing (70.9%) was the most preferred treatment modality followed by topical vasoconstrictors (67.8%), These results appear to be somehow in line with what was found in a study from Kenya where the first aid measure known by most of the clinical staff was nose pinching (94.0%) and nasal packing (80.6%) (Mugwe et al., 2014). Similar findings can be depicted in a study from Nepal where nasal packing was found to be the first line measure used by emergency clinical staff (Adhikari et al., 2006) while 34.3% of the medical students in Saudi Arabia chose nose compression while 33.8% chose nasal packing (Al-Musa et al., 2017) and both were non-surgical measures similar to what has been reported in our study.

Conclusion

Medical students of the State University of Zanzibar had adequate knowledge and positive attitude about first aid management of epistaxis thus empowering them to provide first aid management of epistaxis upon completion of their medical training.

Source of funding

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

Conflict of interest

The authors have no conflicts of interest to declare

Authors' contributions:

ZSA: Conceptualization, project administration, methodology, supervision, data analysis, writing the original draft. HM: Conceptualization, data curation and analysis, writing the original draft. AAK: Conceptualization, data curation, data analysis, writing the original draft. All authors have reviewed and approved the final draft and are responsible for the content and similarity index of the submitted manuscript

Acknowledgements

The authors acknowledge the State University of Zanzibar for providing a favourable environment for conducting the study and also the medical students for enabling the process of data collection to be successful.

References

Krulewitz, N. A., & Fix, M. L. (2019). Epistaxis. *Emergency Medicine Clinics*, *37*(1), 29-39.

Abu-Zaid, A., Alomari, M., AlMazmomy, A. M., Al-Hayani, M., Bazi, A. G., Althagafi, H., & Almadani, H. Y. (2020). Knowledge of first aid management of epistaxis among medical interns attending King Fahad Armed Forces Hospital in Saudi Arabia. *Saudi Journal for Health Sciences*, *9*(2), 136.

Abraham, Z. S., Chugulu, S., Liyombo, E., Massawe, E. R., & Ntunaguzi, D. (2017). Prevalence of Epistaxis among Patients Receiving Otorhinolaryngology Services at Muhimbili National Hospital and Muhimbili Orthopedic Institute, Dar es Salaam, Tanzania.

Alhejaily, M. A., Alatawi, A. A., Alatawi, M. S., & Mrighani, H. O. (2019). Evaluation of knowledge, attitude and practice of epistaxis among the general population of Tabuk City, Saudi Arabia. *The Egyptian Journal of Hospital Medicine*, *75*(1), 1923-1931.

Gilyoma, J. M., & Chalya, P. L. (2011). Etiological profile and treatment outcome of epistaxis at a tertiary care hospital in Northwestern Tanzania: a prospective review of 104 cases. *BMC ear, Nose and throat Disorders*, *11*(1), 1-6.

Almulhim, K. S., Abdulhakim, I., Mubarak, A. S., Hussain, M. A. R. A. S., Alhaddad, M. S., Alotaibi, N. K., & Alyahya, K. A. (2017). Assessment of knowledge attitude and practice of epistaxis in Saudi population. *The Egyptian Journal of Hospital Medicine*, *69*(6), 2675-2679.

Faistauer M, Faistauer Â, Rafaeli SG, Roithmann R. Clinical outcome of patients with epistaxis treated with nasal packing after hospital discharge. Brazilian Journal of Otorhinolaryngology. 2009 Nov 1;75(6):857-65.

Varshney, S., & Saxena, R. K. (2005). Epistaxis: a retrospective clinical study. *Indian Journal of Otolaryngology and Head and Neck Surgery*, *57*, 125-129.

Sowerby, L., Rajakumar, C., Davis, M., & Rotenberg, B. (2021). Epistaxis first-aid management: a needs assessment among healthcare providers. *Journal of Otolaryngology-Head & Neck Surgery*, *50*(1), 1-5.

Abu-Zaid, A., Alomari, M., AlMazmomy, A. M., Al-Hayani, M., Bazi, A. G., Althagafi, H., & Almadani, H. Y. (2020). Knowledge of first aid management of epistaxis among medical interns attending King Fahad Armed Forces Hospital in Saudi Arabia. *Saudi Journal for Health Sciences*, *9*(2), 136.

Al-Musa, H. M., Bharti, R. K., Alsamghan, A. S., Asiri, M., Alqahtani, M. S., Al-qahtani, D., & Al-Malwi, F. (2017). Knowledge of first aid skills among medical students in King Khalid University, Abha, Saudi Arabia. *Peoples J Sci Res*, *10*, 1-6.

Mugwe, P., Kamau, K. J., & Nyambaka, O. K. (2014). Knowledge, attitude and practice in first aid management of epistaxis by accident and emergency clinical staff at Kenyatta National Hospital. *East and Central African Journal of Surgery*, *19*(1), 17-21.

Alyahya, K., Alsaad, S., Alsuliman, S., & Alsuliman, N. (2019). Awareness about first aid management of epistaxis among medical students in Kingdom of Saudi Arabia. *Journal of Family Medicine and Primary Care*, *8*(3), 914.

Adhikari, P., Thapa, N. M., & Sinha, B. K. (2006). Aetiology and management of epistaxis at TU Teaching Hospital. *Journal of Institute of Medicine Nepal*, *28*(2), 2-4.