Exploring the Knowledge and Preparedness for Otolaryngology Emergencies among Senior Medical Students and Interns at Al-Baha University

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ABSTRACT

Introduction: The present study attempts to provide useful insights for medical education training programs by looking at the medical students' knowledge and confidence pertaining to otolaryngology emergencies. It aims to promote developments by highlighting the precise areas where enhancements by medical educators may be advantageous.

Methods: A cross-sectional survey using a structured questionnaire that investigates medical students' awareness of and readiness for otolaryngology emergencies. The questionnaire was distributed electronically. The study population are medical students and interns who successfully completed otolaryngology courses. The survey consists of 29 true or false questions and 7 Likert scale items. Questions probe attendance of any otolaryngology emergency cases including epistaxis, peritonsillar abscess, acute otitis media, mastoiditis, acute otitis externa, and sudden sensorineural hearing loss. Likert scale items measure participants' perceived confidence in managing otolaryngology emergencies. True or false questions evaluate knowledge and decision-making abilities. Descriptive statistics, including means and standard deviations, and inferential statistics, such as chi-square tests were utilized in analysis of data.

Results: A total of 61 participated in the study. Forty of them were 6th year medical students. Thirty-eight were males. Knowledge regarding epistaxis ranged between 75.4- and 86.9%. Knowledge regarding otitis media ranged between 62.3- and 90.2%. Knowledge regarding peritonsillar abscess treatment was at 45.9%. Knowledge regarding sensorineural hearing loss ranged between 42.6%- and 52.5 %. The confidence level of knowledge varied based on sex and educational level of the participant.

Conclusion: The present work contributes valuable insights to medical education and training programs. ILOs in the areas of sensorineural hearing loss, acute otitis externa, and otitis media need be strengthened. The gender gap in acquisition of these ILOs should be approximated. Realtime medical students' clinical exposure to ENT emergencies need be increased.

Key words: ORL education, Al-Baha, ENT emergencies, SaudiMed, ENT ILOs

INTRODUCTION

To improve medical curricula and evolve the standards and competency of the upcoming generation of physicians, it is imperative to comprehend the educational needs and training gaps as the discipline continues to develop. It is essential for competent physicians to recognize, evaluate, and manage critical cases including cases involving ear, nose, and throat conditions. Our aim is to examine the state of medical students' knowledge and preparedness for otolaryngology emergencies at Faculty of Medicine in Al-Baha University.

The Education Evaluation Commission – Higher Education Sector applies The Saudi MED framework as the minimum essential requirement for medical school accreditation in Saudi Arabia. According to the Saudi MED, students ought to be familiar with many otolaryngology clinical entities including ear discharge, Ear pain, Epistaxis, Hearing disturbances/Deafness, Sore, and Stridor(1). Students at our medical college are required to complete a two-credit ENT module in their fifth year. The course learning outcomes (CLO) for this module are closely matched with the Saudi MED Framework. Being able to handle urgent otolaryngology issues is a crucial ability to be obtained. The purpose of this study is to assess the knowledge and preparedness of students and interns who have completed the otolaryngology module at the Al-Baha Faculty of Medicine related to otolaryngology emergencies.

This investigation attempts to provide useful insights for medical education and training programs by looking at the medical students' knowledge base and perceived confidence. We aim to promote developments that enhance the ability of medical educators to equip medical students to navigate and handle otolaryngology emergencies by highlighting the precise areas where enhancements may be advantageous.

In the end, we hope that this study will encourage more discussion, investigation, and improvements in medical education so that future medical professionals will be able to handle the complex problems that arise from otolaryngology emergencies.

METHODS

Study Design: *This study uses a cross-sectional survey approach to investigate medical students' awareness of and readiness for otolaryngology emergencies. The survey aims to thoroughly*

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evaluate the respondent's knowledge and confidence in handling key circumstances within the field of otolaryngology. It consists of twenty-nine true or false questions and 7 Likert scale items.

Study Population: The study targeted medical students and interns who had successfully completed otolaryngology courses. They participated voluntarily by responding to electronic Google Forms questionnaire.

Questionnaire Development: The questionnaire included demographic data such as gender and level of study. It included the GPA and the grade in Otolaryngology and Emergency Medicine modules. It also gathered information about participant attendance to BLS, ATLS, PALS, elective rotation or summer training in Otolaryngology and courses related to Otolaryngology or Emergency Medicine. It also probed if the participant has attended any otolaryngology emergency cases during his study or internship. True and False questions were designed to address a wide range of otolaryngology emergency situations including epistaxis, peritonsillar abscess, acute otitis media, mastoiditis, acute otitis externa, and sudden sensorineural hearing loss. The eight Likert scale items are intended to measure participants' perceived confidence in managing otolaryngology emergencies, while the twenty-nine true or false questions are intended to evaluate factual knowledge and decision-making abilities.

Pilot Testing: Prior to the survey's distribution, a pilot study involving a small sample of medical students and 3 ENT Consultants evaluated the questionnaire's overall efficacy, relevance, and clarity. The survey instrument was improved using feedback from the trial phase.

Data Collection: The survey was distributed electronically through Google Forms. Participants received explanations about the purpose of the study, confidentiality, and the voluntary nature of their involvement. Data Collected were analyzed.

Data Analysis: Quantitative data were obtained from the online responses of the participants, while Likert scale items is analyzed using Excel sheet and SPSS V.16 facilities. Descriptive statistics, including proportions, means and standard deviations were calculated and manipulated in suitable tables and figures to reflect the participant characteristics and survey outcomes.

Ethical Considerations: This study was conducted with adherence to ethical principles, ensuring participant confidentiality, voluntary participation, and informed consent. Approval has been obtained from the Research Ethics Committee at the Faculty of Medicine, Al-Baha University (REC/SUR/BU-FM/2023/78).

RESULTS

In the current study, more than half of the participants were males (62.3%, n=38) while only (37.7%, n=23) were females, Figure 1. Approximately two-thirds of the participants were students of the six-year, while only one-third of them were interns, Figure 2.

When evaluating previous extracurricular experiences (Figure 4) related to emergency and airway management including courses, summer electives and certifications, the majority of respondent had never participated in any of the previous mentioned. 11.5% reported taking a course related to emergency medicine while 9.8% did elective summer training in Emergency Medicine.

Regarding the general GPA of the study participants, the highest GPA was B (26.2%) and A (23%), while the least one is D+ (1.6%), **Figure 3A**. In the ENT module, the A+ was the highest GPA (80.3%), while the lowest was B+ and C (1.6%) for each, **Figure 3B.** In the emergency module, the highest GPA was B+ and the lowest was C (1.6), **Figure 3C.**

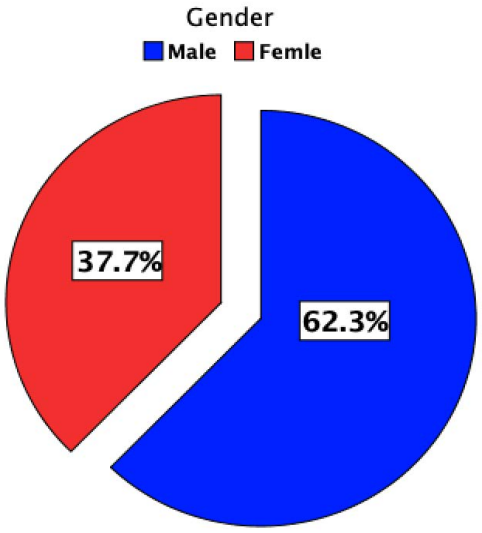

Figure 1. The distribution of the gender of the participants, n=61

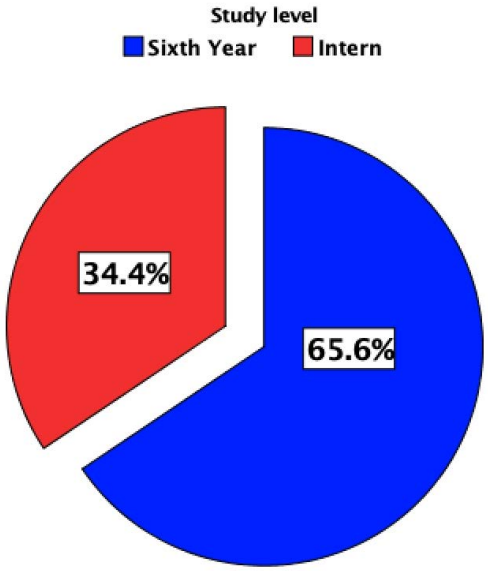

Figure 2. Different levels of the study participants, n=61

Regarding epistaxis, participants of both genders showed a percentage of knowledge ranging (75.4-86.9%) about its causes, initial management, and its association with hypertension or blood clotting disorders. Females showed more knowledge than males (F:M, 87.9%:64.4%, 82.6%:73.7% and 100%:78.9%), Table 1.

Regarding acute otitis media, participants showed a percentage of knowledge ranging (62.3-90.2%) about its age group affection, its complications such as tympanic membrane perforation, and antibiotic use to address it and its mastoid abscess complication. Females showed higher knowledge than males (F:M, 82.6, 95.7 and 69.7%), except about its primary symptom where males tend to be more aware (84.2%), Table 1.

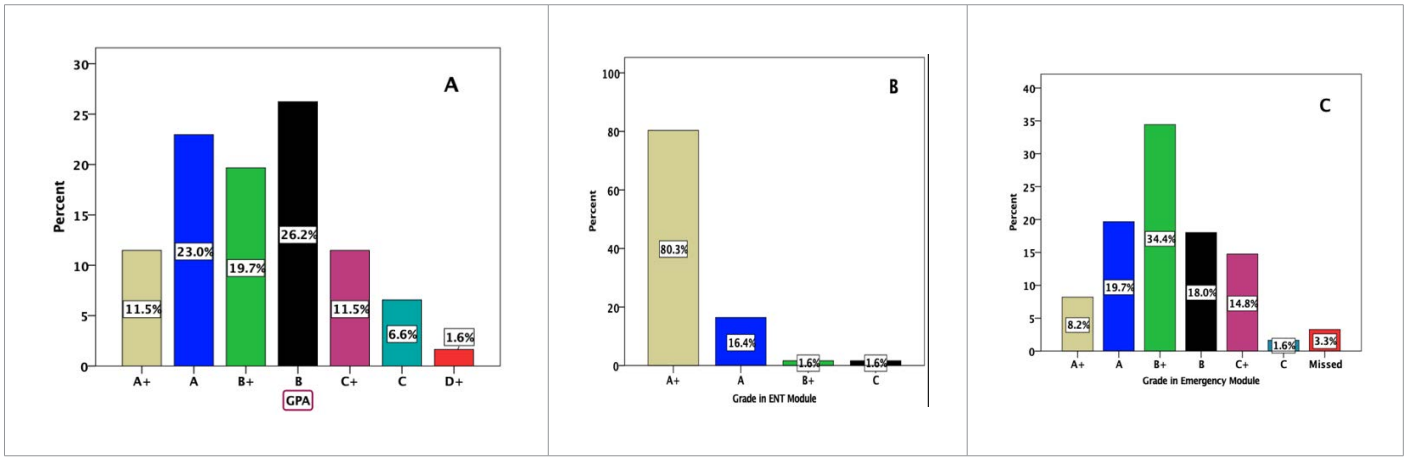

Figure 3. The frequency percentage of the study participants; general GPA (A), grades in ENT module at fifth year (B) and grades in Emergency module at six year (C).

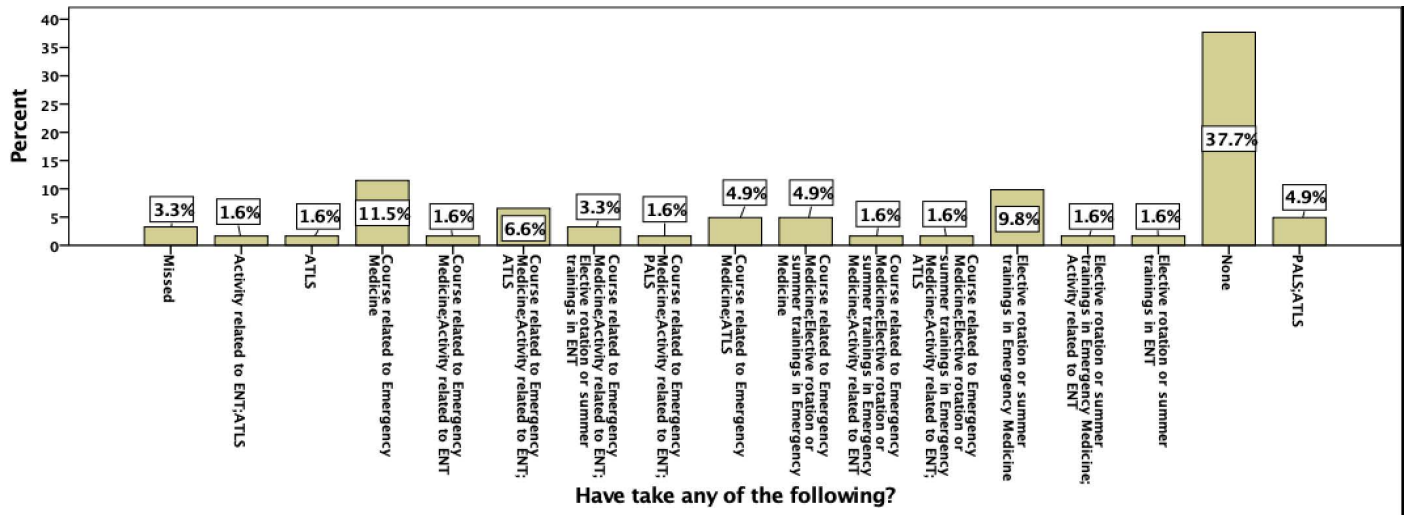

Figure 4. Response percent of participants regarding the having certain case topics during their study of the two modules, n = 61.

Table 1. Response of the participants to various questions regarding the attending ENT cases presented in figure 2 during the previous two modules. Response was categorized as gender-wise, n= 61, Males=38, Female = 23). Number of responses with percentage between the brackets.

#	Question	sex	Response (Frequency/%)		
			TRUE	FALSE	I don't know
1	Dry air is a common cause of epistaxis	Male	26(68.4)	1(2.6)	11(28.9)
		Female	20(87.9)	2(8.7)	1(4.3)
		Total	**46(75.4)**	**3(4.9)**	**12(19.7)**
2	The recommended initial management for anterior epistaxis is pinching the nostrils together and leaning forward?	Male	28(73.7)	3(7.9)	7(18.4)
		Female	19(82.6)	2(8.7)	2(8.7)
		Total	**47(77)**	**5(8.2)**	**9(14.8)**
3	Epistaxis can be associated with underlying medical conditions like hypertension or blood clotting disorders?	Male	30(78.9)	1(2.6)	7(18.4)
		Female	23(100)	0(0.0)	0(0.0)
		Total	**53(86.9)**	**1(1.6)**	**7(11.5)**
4	The primary symptom of acute otitis media is ear pain?	Male	32(84.2)	1(2.6)	5(13.2)
		Female	19(82.6)	3(13.0)	1(4.3)
		Total	**51(83.6)**	**4(6.6)**	**6(9.8)**
5	Acute otitis media primarily affects the elderly population?	Male	4(10.5)	19(50)	5(13.2)
		Female	2(8.7)	19(82.6)	2(8.7)
		Total	**6(9.8)**	**48(78.7)**	**7(11.5)**
6	Acute otitis media can lead to complications such as tympanic membrane perforation?	Male	33(36.8)	1(2.6)	4(10.5)
		Female	22(95.7)	0(0.0)	1(4.3)
		Total	**55(90.2)**	**1(1.6)**	**5(8.2)**

7	Antibiotics are adequate to treat acute otitis media complicated by mastoid abscess?	Male	11(28.9)	22(57.9)	5(13.2)
		Female	4(17.4)	16(69.7)	3(13.0)
		Total	**15(24.6)**	**38(62.3)**	**8(13.1)**
8	Acute otitis externa is often associated with water exposure?	Male	28(73.7)	7(18.4)	3(7.9)
		Female	22(95.7)	1(4.3)	0(0.0)
		Total	**50(81.9)**	**8(13.2)**	**3(4.9)**
9	The primary treatment for simple acute otitis externa usually involves the use of oral antibiotics?	Male	7(18.4)	25(65.8)	6(15.8)
		Female	6(26.1)	15(65.2)	2(8.7)
		Total	**13(21.3)**	**40(65.5)**	**8(13.2)**
10	In cases of otitis externa where canal is blocked by swelling ear antibiotics drops are sufficient treatment?	Male	14(36.8)	18(47.4)	6(15.8)
		Female	5(21.7)	15(65.2)	3(13.0)
		Total	**19(31.1)**	**33(54.1)**	**9(14.8)**
11	It is safe to attempt removing a foreign body from the ear at home using objects like cotton swabs or tweezers?	Male	3(7.9)	29(76.3)	6(15.8)
		Female	2(8.7)	19(82.6)	2(8.7)
		Total	**5(83.3)**	**48(78.6)**	**8(13.1)**
12	Complications of a foreign body in the ear may include damage to the eardrum?	Male	23(60.5)	0(0.0)	6(15.8)
		Female	22(95.7)	0(0.0)	1(4.3)
		Total	**54(88.5)**	**0(0.0)**	**7(11.5)**
13	Foreign bodies in the ear are more common in adults than in children?	Male	2(5.3)	28(73.7)	8(21.1)
		Female	3(13.0)	18(78.3)	2(8.7)
		Total	5(8.2)	46(75.4)	10(16.4)
14	Nasal foreign bodies are common in children, but they rarely occur in adults?	Male	26(68.4)	1(2.6)	11(28.9)
		Female	18(78.3)	1(4.3)	4(17.4)
		Total	**44(72.1)**	**2(3.3)**	**15(24.6)**
15	Delayed removal of a nasal foreign body may lead to complications, such as infection or damage to the nasal septum?	Male	31(81.6)	1(2.6)	6(15.8)
		Female	22(95.7)	0(0.0)	1(4.3)
		Total	**53(86.9)**	**1(1.6)**	**7(11.5)**
16	A foreign body in the airway can cause life-threatening airway obstruction?	Male	34(89.5)	1(2.6)	3(7.9)
		Female	22(95.7)	0(0.0)	1(4.3)
		Total	**56(91.8)**	**1(1.6)**	**4(6.6)**
17	The initial step in managing a patient with a suspected airway obstruction is establishing an airway?	Male	32(84.2)	1(2.6)	5(13.2)
		Female	20(86.9)	1(4.3)	2(8.7)
		Total	**52(85.2)**	**2(3.3)**	**7(11.5)**
18	In cases of suspected foreign body aspiration, immediate medical evaluation and intervention are not necessary?	Male	3(7.9)	32(84.2)	3(7.9)
		Female	2(8.7)	18(78.3)	3(13.0)
		Total	**5(8.2)**	**50(82)**	**6(9.8)**
19	Bronchoscopy is a diagnostic and therapeutic procedure used to retrieve airway foreign bodies?	Male	31(81.6)	3(7.9)	4(10.5)
		Female	17(73.9)	0(0.0)	6(26.1)
		Total	**48(78.7)**	**3(4.9)**	**10(16.4)**
20	Antibiotics alone are sufficient for treating peritonsillar abscess?	Male	8(21.1)	21(55.3)	9(23.7)
		Female	2(8.7)	17(73.9)	4(17.4)
		Total	**10(16.4)**	**38(62.3)**	**13(21.3)**
21	Surgical drainage is often required to treat a peritonsillar abscess?	Male	27(71.1)	5(13.2)	6(15.8)
		Female	21(91.3)	0(0.0)	2(8.7)
		Total	**48(78.7)**	**5(8.2)**	**8(13.1)**
22	Peritonsillar abscess may cause difficulty breathing and ear pain?	Male	29(76.3)	1(2.6)	8(21.1)
		Female	18(78.3)	0(0.0)	5(21.7)
		Total	**47(77.0)**	**1(1.6)**	**13(21.4))**
23	A peritonsillar abscess may cause difficulty opening the mouth and a "hot potato" voice?	Male	29(76.3)	1(2.6)	8(21.1)
		Female	21(91.3)	0(0.0)	2(8.7)
		Total	**50(82)**	**1(1.6)**	**10(16.4)**
24	Peritonsillar abscess can lead to complications if not promptly and appropriately treated?	Male	25(65.9)	6(15.8)	7(18.4)
		Female	21(91.3)	0(0.0)	2(8.7)
		Total	**46(75.4)**	**6(9.8)**	**9(14.8)**
25	Sudden sensorineural hearing loss is typically a gradual loss of hearing over several weeks or months?	Male	8(21.1)	18(47.4)	12(31.6)
		Female	3(13.0)	13(56.5)	7(30.4)
		Total	**11(18.0)**	**31(50.9)**	**19(31.1)**

26	Treatment options for sudden sensorineural hearing loss may include steroids and hyperbaric oxygen therapy?	Male	14(36.8)	5(13.2)	19(50)
		Female	11(47.8)	1(4.3)	11(47.8)
		Total	**25(41.0)**	**6(9.8)**	**30(49.2)**
27	Most cases of sudden sensorineural hearing loss are associated with an underlying infection?	Male	16(42.1)	6(15.8)	16(42.1)
		Female	10(43.5)	3(13.0)	10(43.5)
		Total	**26(42.6)**	**9(14.8)**	**26(42.6)**
28	Sudden sensorineural hearing loss only affects the elderly population?	Male	6(15.8)	19(50)	13(34.2)
		Female	5(21.7)	10(43.5)	8(34.8)
		Total	**11(18.0)**	**29(47.6)**	**21(34.4)**
29	Tinnitus (ringing in the ears) is not commonly associated with sudden sensorineural hearing loss?	Male	6(15.8)	11(28.9)	21(55.3)
		Female	6(26.1)	6(26.1)	11(47.8)
		Total	**12(19.7)**	**17(27.9)**	**32(52.4)**

Table 2. Response of the participants to various questions regarding the attending ENT cases presented in figure 2 during the previous two modules. Responses were categorized by their educational level, n= 61, Six year = 40, Intern = 21. Number of responses with percentage between the brackets.

#	Question	Educational level	Response (Frequency/%)		
			TRUE	FALSE	I don't know
1	Dry air is a common cause of epistaxis	Six year	32(80)	3(7.5)	5(12.5)
		Intern	14(66.7)	0(0.0)	7(33.3)
		Total	**46(75.4)**	**3(4.9)**	**12(19.7)**
2	The recommended initial management for anterior epistaxis is pinching the nostrils together and leaning forward?	Six year	30(75)	4(10)	6(15)
		Intern	17(81)	1(4.8)	3(14.3)
		Total	**47(77.0)**	**5(8.2)**	**9(14.8)**
3	Epistaxis can be associated with underlying medical conditions like hypertension or blood clotting disorders?	Six year	36(90)	0(0.0)	4(10)
		Intern	17(81)	1(4.8)	3(14.3)
		Total	**53(86.9)**	**1(1.6)**	**7(11.5)**
4	The primary symptom of acute otitis media is ear pain?	Six year	35(87.5)	2(5)	3(7.5)
		Intern	16(76.2)	2(9.5)	3(14.3)
		Total	**51(83.6)**	**4(6.6)**	**6(9.8)**
5	Acute otitis media primarily affects the elderly population?	Six year	2(5)	32(80)	6(15)
		Intern	4(19)	16(76.2)	1(4.8)
		Total	**6(9.8)**	**48(78.7)**	**7(11.5)**
6	Acute otitis media can lead to complications such as tympanic membrane perforation?	Six year	36(90)	1(2.5)	3(7.5)
		Intern	19(90.5)	0(0.0)	2(9.5)
		Total	**55(90.2)**	**1(1.6)**	**5(8.2)**
7	Antibiotics are adequate to treat acute otitis media complicated by mastoid abscess?	Six year	12(30)	24(60)	4(10)
		Intern	3(14.3)	14(66.7)	4(19)
		Total	**15(24.6)**	**38(62.3)**	**8(13.1)**
8	Acute otitis externa is often associated with water exposure?	Six year	23(57.5)	5(12.5)	3(7.5)
		Intern	18(85.7)	3(14.3)	0(0.0)
		Total	**50(82.0)**	**8(13.1)**	**3(4.9)**
9	The primary treatment for simple acute otitis externa usually involves the use of oral antibiotics?	Six year	11(27.5)	24(60)	5(12.5)
		Intern	2(9.5)	16(76.2)	3(14.3)
		Total	**13(21.3)**	**40(65.6)**	**8(13.1)**
10	In cases of otitis externa where canal is blocked by swelling ear antibiotics drops are sufficient treatment?	Six year	13(32.5)	22(55)	5(12.5)
		Intern	6(28.6)	11(52.4)	4(19)
		Total	**19(31.1)**	**33(54.1)**	**9(14.8)**
11	It is safe to attempt removing a foreign body from the ear at home using objects like cotton swabs or tweezers?	Six year	4(10)	29(72.5)	7(17.5)
		Intern	1(4.8)	19(90.5)	1(4.8)
		Total	**5(8.2)**	**48(78.7)**	**8(13.1)**
12	Complications of a foreign body in the ear may include damage to the eardrum?	Six year	35(87.5)	5(12.5)	0(0.0)
		Intern	19(90.5)	2(9.5)	0(0.0)
		Total	**54(88.5)**	**7(11.4)**	**0(0.0)**
13	Foreign bodies in the ear are more common in adults than in children?	Six year	3(7.5)	33(82.5)	4(10)
		Intern	2(9.5)	13(61.9)	6(28.6)
		Total	**5(8.2)**	**46(75.4)**	**10(16.4)**

14	Nasal foreign bodies are common in children, but they rarely occur in adults?	Six year	30(75)	2(5)	8(20)
		Intern	14(66.7)	0(0.0)	7(33.3)
		Total	**44(72.1)**	**2(3.3)**	**15(24.6)**
15	Delayed removal of a nasal foreign body may lead to complications, such as infection or damage to the nasal septum?	Six year	36(90)	1(2.5)	3(7.5)
		Intern	17(81)	0(0.0)	4(19)
		Total	**53(86.9)**	**1(1.6)**	**7(11.5)**
16	A foreign body in the airway can cause life-threatening airway obstruction?	Six year	36(90)	1(2.5)	3(7.5)
		Intern	20(95.2)	0(0.0)	1(4.8)
		Total	**56(91.8)**	**1(1.6)**	**4(6.6)**
17	The initial step in managing a patient with a suspected airway obstruction is establishing an airway?	Six year	34(85)	2(5)	4(10)
		Intern	18(85.7)	0(0.0)	3(14.3)
		Total	**52(85.2)**	**2(3.3)**	**7(11.5)**
18	In cases of suspected foreign body aspiration, immediate medical evaluation and intervention are not necessary?	Six year	4(10)	32(80)	4(10)
		Intern	1(4.8)	18(85.7)	2(9.5)
		Total	**5(8.2)**	**50(82.0)**	**6(9.8)**
19	Bronchoscopy is a diagnostic and therapeutic procedure used to retrieve airway foreign bodies?	Six year	30(75)	2(5)	8(20)
		Intern	18(85.7)	1(4.8)	2(9.5)
		Total	**48(78.7)**	**3(4.9)**	**10(16.4)**
20	Antibiotics alone are sufficient for treating peritonsillar abscess?	Six year	7(17.5)	27(67.5)	6(15)
		Intern	3(14.3)	11(52.4)	7(33.3)
		Total	**10(16.4)**	**38(62.3)**	**13(21.3)**
21	Surgical drainage is often required to treat a peritonsillar abscess?	Six year	31(77.5)	4(10)	5(12.5)
		Intern	17(81)	1(4.8)	3(14.3)
		Total	**48(78.7)**	**5(8.2)**	**8(13.1)**
22	Peritonsillar abscess may cause difficulty breathing and ear pain?	Six year	29(72.5)	0(0.0)	11(27.5)
		Intern	18(85.7)	1(4.8)	2(9.5)
		Total	**47(77.0)**	**1(1.6)**	**13(21.3)**
23	A peritonsillar abscess may cause difficulty opening the mouth and a "hot potato" voice?	Six year	31(77.5)	0(0.0)	9(22.5)
		Intern	19(90.5)	1(4.8)	1(4.8)
		Total	**50(82.0)**	**1(1.6)**	**10(16.4)**
24	Peritonsillar abscess can lead to complications if not promptly and appropriately treated?	Six year	29(72.5)	4(10)	7(17.5)
		Intern	17(81)	2(9.5)	2(9.5)
		Total	**46(75.4)**	**6(9.8)**	**9(14.8)**
25	Sudden sensorineural hearing loss is typically a gradual loss of hearing over several weeks or months?	Six year	6(15)	20(50)	14(35)
		Intern	5(12.5)	11(52.4)	5(12.5)
		Total	**11(18.0)**	**31(50.8)**	**19(31.2)**
26	Treatment options for sudden sensorineural hearing loss may include steroids and hyperbaric oxygen therapy?	Six year	17(42.5)	4(10)	19(47.5)
		Intern	8(38.1)	2(9.5)	11(52.4)
		Total	**25(41.0)**	**6(9.8)**	**30(49.2)**
27	Most cases of sudden sensorineural hearing loss are associated with an underlying infection?	Six year	18(45)	7(17.5)	15(37.5)
		Intern	8(38.1)	2(9.5)	11(52.4)
		Total	**26(42.6)**	**9(14.8)**	**26(42.6)**
28	Sudden sensorineural hearing loss only affects the elderly population?	Six year	9(22.5)	18(45)	13(32.5)
		Intern	2(9.5)	11(52.4)	8(38.1)
		Total	**11(18.0)**	**29(47.5)**	**21(34.5)**
29	Tinnitus (ringing in the ears) is not commonly associated with sudden sensorineural hearing loss?	Six year	7(17.5)	15(37.5)	18(45)
		Intern	5(12.5)	2(9.5)	14(66.7)
		Total	**12(19.7)**	**17(27.9)**	**32(52.5)**

Table 3. Rating score response of participants regarding specific questions concerning their confidence level of knowledge using scale of 1 to 5 (with 1 being very low and 5 being very high). The values were categorized based on the participants' gender type, n=61.

#	Question	sex	Response (Frequency/%)				
			V. low	Low	Neutral	High	V. high
1	Please rate your confidence level in your knowledge of foreign bodies in the ear on a scale of 1 to 5 (with 1 being very low and 5 being very high)	Male	1	12	17	6	2
		Female	0	1	12	9	1
		Total	**1(1.6)**	**13(21.3)**	**29(47.5)**	**15(24.6)**	**3(4.9)**
2	Please rate your confidence level in your knowledge of Sudden Sensorineural Hearing Loss	Male	10	11	12	2	3
		Female	3	3	14	2	1
		Total	**13(21.3)**	**14(23.0)**	**26(42.6)**	**4(6.6)**	**4(6.6)**
3	Please rate your confidence level in your knowledge Epistaxis	Male	1	6	13	14	4
		Female	0	2	10	6	5
		Total	**1(1.6)**	**8(13.1)**	**23(37.7)**	**20(32.8)**	**9(14.8)**
4	Please rate your confidence level in your knowledge of Acute Otitis Externa	Male	0	4	12	16	6
		Female	0	1	6	10	6
		Total	**0(0.0)**	**5(8.2)**	**18(29.5)**	**26(42.6)**	**12(19.7)**
5	Please rate your confidence level in your knowledge of Acute Otitis Media	Male	0	5	9	14	10
		Female	0	1	5	9	8
		Total	**0(0.0)**	**6(9.8)**	**14(23.0)**	**23(37.7)**	**18(28.5)**
6	Please rate your confidence level in your knowledge of foreign bodies in the nose	Male	1	8	16	9	4
		Female	0	3	8	9	3
		Total	**1(1.6)**	**11(18.0)**	**24(39.3)**	**18(29.5)**	**7(11.5)**
7	Please rate your confidence level in your knowledge of Foreign Body in Airway	Male	0	5	14	11	8
		Female	0	1	6	12	4
		Total	**0(0.0)**	**6(9.8)**	**20(32.8)**	**23(37.7)**	**12(19.7)**
8	Please rate your confidence level in your knowledge of Peritonsillar Abscess	Male	2	9	16	9	2
		Female	0	6	10	4	3
		Total	**2(3.3)**	**15(24.6)**	**26(42.6)**	**13(21.3)**	**5(8.2)**
	Score (Mean + SD)	3.34±0.66					
	Reliability Statistics	**Cronbach's Alpha**	**Cronbach's Alpha Based on Standardized Items**	**N of Items**			
		0.845	0.853	8			

Concerning acute otitis externa, participants showed a percentage of knowledge ranging (from 54.1%-82 %) about its association with water exposure, the use of oral antibiotics as a primary treatment, and antibiotics drops are sufficient treatment when the ear canal is blocked. Females showed more or equal knowledge than males (F:M, 95.7%:73.7, 65.2%:65.8% and 65.2%:47.4%), Table 1.

Regarding foreign body (FB) in ENT, participants showed a percentage of knowledge ranging (from 72.1-91.8%) about its attempt of removal using objects like cotton swabs or tweezers, its complications, its age distribution, its delay of removal complications, its effect on the airway, the steps of managing an obstructed airway, the importance of medical evaluation of inhaled FB, and the importance of bronchoscopy in retrieving FB. Females showed more knowledge than males (F:M, 82.6%:76.3%, 95.7%:60.5%, 78.3%:73.7%, 78.3%:68.4%, 95.7%:81.6% and 95.7%:89.5%, 86.9%:84.2%, 78.3%:84.2%, 73.9%:81.6%), Table 1.

Regarding peritonsillar abscess, participants showed acceptable level of knowledge 62.5%-82% about its different modalities of treatment, the importance of surgical treatment, clinical features, and complications if not promptly and appropriately. Females showed remarkably more knowledge than males (F:M, 73.9%:55.3%, 91.3%:71.1%, 78.3%:76.3%, 91.3%:76.3%, and 91.3%:65.9%), Table 1.

Observing sensorineural hearing loss participants showed a significant lack of knowledge ranging from (14.8%- 52.5 %) about its duration, steroids, and hyperbaric oxygen therapy as treatment options, etiology, age distribution, and association with tinnitus. Females showed more knowledge than males (F:M, 56.5%:47.4%, 47.8%:36.8%, 13%:15.8%, 43.5:50% and 26%:28.9%), Table 1.

Regarding epistaxis, Six-year showed more knowledge than interns in etiology(6^{th}:I, 80%:66.7% and 90%:81%), but interns were more aware about the recommended initial management for anterior epistaxis (81%:75%), **Table 2.**

Regarding acute otitis media, sixth-year students showed more knowledge than interns (6^{th}:I, 87.5%:76.2%, 80%:76.2%, 90%:90.5%, and 60%:66.7%), **Table 2.**

Concerning acute otitis externa, interns showed more knowledge than Six-year (I:6^{th}, 85.7%:57.5%, 76.2%:60% and 52.4%:55%), **Table 2.**

Regarding FB in ENT, interns showed in majority of the questions more knowledge than Six year (I:6^{th}, 90.5%:72.5%, 90.5%:87.5%, 61.9%:82.5%, 66.7%:75%, 81%:90%, 95.2%:90%, 85.7%:85%, 85.7%:80, 85.7%:75%) **Table 2.**

Table 4. Rating score response of participants regarding specific questions concerning their confidence level of knowledge using scale of 1 to 5 (with 1 being very low and 5 being very high). The values were categorized based on the participants' educational level, n=61.

#	Question	Educational level	Response (Frequency/%)				
			V. low	Low	Neutral	High	V. high
1	Please rate your confidence level in your knowledge of foreign bodies in the ear on a scale of 1 to 5 (with 1 being very low and 5 being very high)	Six year	1	6	18	12	3
		Intern	0	7	11	3	0
		Total	**1(1.6)**	**13(21.3)**	**29(47.5)**	**15(24.6)**	**3(4.9)**
2	Please rate your confidence level in your knowledge of Sudden Sensorineural Hearing Loss	Six year	9	7	18	2	4
		Intern	4	7	8	2	0
		Total	**13(21.3)**	**14(23.0)**	**26(42.6)**	**4(6.6)**	**4(6.6)**
3	Please rate your confidence level in your knowledge Epistaxis	Six year	1	4	12	14	9
		Intern	0	4	11	6	0
		Total	**1(1.6)**	**8(13.1)**	**23(37.7)**	**20(32.8)**	**9(14.8)**
4	Please rate your confidence level in your knowledge of Acute Otitis Externa	Six year	0	4	7	18	11
		Intern	0	1	11	8	1
		Total	**0(0.0)**	**5(8.2)**	**18(29.5)**	**26(42.6)**	**12(19.7)**
5	Please rate your confidence level in your knowledge of Acute Otitis Media	Six year	0	3	7	15	15
		Intern	0	3	7	8	3
		Total	**0(0.0)**	**6(9.8)**	**14(23.0)**	**23(37.7)**	**18(29.5)**
6	Please rate your confidence level in your knowledge of foreign bodies in the nose	Six year	1	4	16	12	7
		Intern	0	7	8	6	0
		Total	**1(1.6)**	**11(18.0)**	**24(39.3)**	**18(29.5)**	**7(11.5)**
7	Please rate your confidence level in your knowledge of Foreign Body in Airway	Six year	0	4	12	15	9
		Intern	0	2	8	8	3
		Total	**0(0.0)**	**6(9.8)**	**20(32.8)**	**23(37.7)**	**12(19.7)**
8	Please rate your confidence level in your knowledge of Peritonsillar Abscess	Six year	2	6	17	10	5
		Intern	0	9	9	3	0
		Total	**2(3.3)**	**15(24.6)**	**26(42.6)**	**13(21.3)**	**5(8.2)**

Regarding peritonsillar abscess, interns showed more knowledge than six-year (I:6th, 52.4%:67.5%, 81%:77.5%, 85.7%:72.5%, 90.5%:77.5% and 81%:72.5%), **Table 2.**

Observing sensorineural hearing loss Sixth-year students showed more knowledge than interns (6th:I, 50%:52.4, 42.5%:38.1%, 45%:38.1%, 45%:52.4% and 37.5%:9.5%), **Table 2.**

The reliability statistics estimated as Cronbach's (α) of the questionnaire was 0.845, while it is value based on Standardized Items was 0.853, (n=8 items) for the scored (Mean + SD: 3.34±0.66), Table 3.

The confidence level of knowledge of the participants varies based on both the sex (Table 3) and educational level (Table 4).

Regarding sex, in 5 out of 8 items participants scored neutral responses. Considering both acute otitis media and FB participants scored a high confidence level (37.7%, n=61), Table 3.

Regarding educational level, in 5 out of 8 items participants scored neutral responses. Considering Acute Otitis Externa (42.6%) acute otitis media (37.7%) and FB (37.7%) participants scored a high confidence level, Table 4.

DISCUSSION

ENT-related problems are a common presentation in clinical practice[1], it is estimated that about 10% of adult and 50% of pediatric patients present to general practitioners with ENT-related problems[2,3]. Still, ENT undergraduate teaching is considered to be shorter than what is required in many countries[4-7]. A systematic literature review done in the UK concluded that the majority of Final-year medical students and junior doctors in the UK lack confidence in managing common otolaryngology problems[5]. Another study reported low knowledge and confidence among junior trainees in the emergency departments of different hospitals in the UK[8]. It has been estimated that about 9% of emergency department patients presented with ENT-related complain[9]. Epistaxis can be categorize into anterior and posterior epistaxis, and is often associated with local factors such as dry air or systemic factors such as hypertension and anticoagulant therapy[10]. Epistaxis is one of the most comments ENT emergencies accounting for about 25% of all ENT emergencies[11]. When surveying the students, the majority (37.7%) were neutral on their confidence in managing epistaxis. 75.4 % of them identified dry air as a cause of epistaxis and 86.9% identified hypertension or blood clotting disorders **association. 77% identified correct first aid management in attending epistaxis case. Otological cases accounted for 65% of ENT emergencies and about 2.2% of all Emergency Department visit[9,12]. Among the most frequent complaints were otalgia accounting for about 12% [9,11].83% of participants identified earache as primary symptom of acute otitis media. Acute Otitis media is predominantly present in pediatric population if undertreated it may lead to complication such as tympanic membrane perforation and mastoiditis and development of mastoid abscess which then need to be surgically treated along with antimicrobial therapy [13-15]. Participants correctly identified the age group predominantly affected by otitis media in 78.7% of the responses, they identified tympanic membrane perforation as a complication in 90.2% and the adequate mastoid abscess in only 62.3%, they rated their confidence in managing acute otitis media as high in 42.6%. Acute otitis externa is defined as diffuse inflammation of external ear**

canal caused by infection by mainly Pseudomonas aeruginosa and Staphylococcus aureus, it is associated with water exposure and referred to as swimmer ear. The primary management is local antibiotic and cortisone ear drops, blocked ear canal necessitates insertion of ear wick to allow antibiotic drops delivery and prevent treatment failure[16,17]. 82% of the response identified association with water exposure, 65.6% correctly rejected the need for oral antibiotic in treating simple otitis externa and 54.1% identified necessity for further measures when ear canal is blocked. Sudden sensorineural hearing loss is a rapid decline in hearing sense that can affect all age groups, it is idiopathic in nature and frequently associated with tinnitus. A spontaneous recovery happens in 32-65% of all cases, nevertheless corticosteroid treatment within first two weeks and hyperbaric oxygen chamber as salvage or with initial therapy may be offered[18]. Only 50.8% of the participant in this study could define sudden sensorineural hearing loss, 47.5 correctly rejected the false statement in regard of age affected, and only 14.8 chose the correct answer about etiology and only 27.9% correctly answer the question related to its association with Tinnitus. In regard of sudden sensorineural hearing loss, 41% of the participants identified steroid and hyperbaric oxygen chamber as management options. 21.3% rated their confidence in managing sudden sensorineural hearing loss as very low. This highlights a deficiency when compared to a study surveying Canadian medical students reporting about 80% confidence in same topic[7]. Foreign bodies in ENT are a common problem among children, often require removal under general anesthesia. Foreign body removal from the nose is an emergency to avoid aspiration or damage to nasal mucosa and septum. Foreign bodies in the airways represent a critical emergency and require patient stabilization and bronchoscopy removal[19]. 78.7% of the participant advised correctly to refrain from trying to remove the foreign body in the ear at home and 88.5% showed knowledge about possible complications as tympanic membrane perforation. 75.4% correctly identified children as the highest risk age group for foreign bodies in the ear and 72.1% for the foreign bodies in the nose. 86.9% and 91.8 of the respondents identified potential complications of nasal and airway foreign bodies respectively. Respondents chose the right answer in 78.7-85.2 in question regarding management of airway foreign bodies. Peritonsillar abscess or as known as Quincy abscess is a complication of acute tonsillitis formed by collection of pus around the tonsil. It presents trismus and voice changes. It mandates drainage and antibiotic treatment to avoid further complication[20]. Participant in our study showed level of knowledge 62.5%-82% .

CONCLUSION

Despite the alignment of teaching curricula in Saudi Arabia with the requirement of SaudiMed and The World Federation for Medical Education, the present work provides an exploration of medical students' knowledge and preparedness in otolaryngology emergencies. It contributes valuable insights to medical education and training programs. ILOs in the areas of sensorineural hearing loss, acute otitis externa, and otitis media need be strengthened. Gender gap in acquisition of these ILOs should be approximated. Realtime medical students' clinical exposure to ENT emergencies need be increased.

STUDY LIMITATIONS

The small sample size, and its representation of only students in Al-Baha University limits the usefulness of the study countrywide. Variation in conduction and clinical exposure as well as simulation as teaching modality may influence outcome. We recommend further wider studies evaluation in ENT knowledge among medical students and junior doctors in the discipline dealing with high number of ENT patients as family medicine and emergency medicine to further enhance ENT undergraduate curriculum.

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