

Assessing Medical Student Basic Otolaryngology Knowledge: A questionnaire-based Study

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Abstract

Background: Otolaryngology is one of the oldest medical specialties that involves the diagnosis and treatment of patients with diseases and conditions of the ears, nose, throat, head, and neck. The commonest ENT cases encountered by physicians are tonsillitis, acute otitis media, pharyngitis, epistaxis, and hay fever. The prevalence of otolaryngologic complaints in general practice is disproportionately high compared to the amount of otolaryngology module provided in medical school.

Objectives: The purpose of this study is to assess medical students' basic otolaryngology knowledge. Additionally, we will check factors that determine the level of knowledge.

Methods: A cross-sectional survey was conducted among medical students in clinical years in the Saudi Arabia who studied ENT module. Participating students completed an online questionnaire that included questions related to ENT module.

Results: The study included 483 participants, 53.4% were males and 46.6% were females. 43.7% were in the 4th academic year. 16.1% of participants intent to choose ENT as future specialty. 94.6% took ENT module and test. 44.5% reported spending 1-2 days on an ENT service or office, as part of clinical education. The majority of our study participants correctly answered ENT cases.

Conclusion: Saudi medical students have appropriate knowledge of basic otolaryngology. With a significant proportion of ENT complaints in general practice, it is critical that all graduating medical students, not just those entering ENT, are adequately trained in basic ENT to perform competently and be confident enough to manage or refer these patients.

Keywords: medical, student, basic, otolaryngology, knowledge, Saudi

Introduction

The specialty of otorhinolaryngology (often known as ENT) arose from the merging of the two fields of otology and laryngology in the beginning of the twentieth century. Otolologists were surgeons, while laryngologists were doctors who manage issues with the nose and chest (1).

The otorhinolaryngology undergraduate medical education system taught in the US is disproportionate to the number of ENT (ear, nose, and throat) cases that physicians encounter. Around 10% of new adult general practitioner consultations are for ENT complaints. In the pediatric population, approximately 50% of patients seeing a general practitioner report an ENT complaint. Primary care providers, as well as all graduating medical students, must be capable of detecting and managing basic ENT disorders (2).

The research team discovered a gap in the literature when it came to evaluating a medical student's understanding of basic ENT disorders. Furthermore, a cross-sectional study conducted in 2018 on medical students and resident doctors in the following departments; internal medicine, emergency medicine, family medicine, and otolaryngology, with a total of 372 participants using a 10 question questionnaire multichoice, showed an average score of 93% among otolaryngologists while all the other scored an average score of 56% (3).

Due to the high number of cases that physicians encounter in the otorhinolaryngology (ENT) field, detecting, managing basic ENT disorders, and understanding when to refer patients to otolaryngologists is essential, especially for primary care providers and graduating medical students. Our study is designed to assess medical students' basic otolaryngology knowledge in the Kingdom Saudi Arabia; We also planned to identify the deficits area for each participant and elaborate on it and suggest appropriate resources.

Methodology

Study design: This was an observational study with a cross-sectional sample.

Study settings: The study was conducted in Saudi Arabia where data was collected through electronic online questionnaire between October 2021 and March 2022.

Study population: All clinical years' medical students, either male or female in Saudi Arabia. The inclusion criteria were all medical students either male or female including all clinical years in medical school, in which years head and neck examination was learned and from those who were willing to participate in the study. The exclusion criteria were any non-medical students and medical students in basic years or who had not studied the otolaryngology module.

Sample size: Considering a marginal error of 5%, a confidence level of 95%, and considering maximum uncertainty (50% of positive responses), a minimum of 377 participants were needed to be included in this study. The sample size was calculated by using the Qualtrics calculator.

Data collection method: Data was collected using a self-administered, electronic online questionnaire that was distributed to all medical students in Saudi Arabia as a link to a Google form using social media platforms (e.g., Twitter, Instagram, Linked-in, WhatsApp, ...etc.).

Data collection tools: A structured questionnaire was used as a study tool. It was classified into two main sections. The first section contained sociodemographic data and the second section questions about the basic knowledge in ENT. A designed questionnaire (as a Google form) was shared with the targeted population through social media platforms (Facebook, Twitter, Instagram and WhatsApp), We used a similar questionnaire from a previous study (2).

Ethical consideration: The research proposal was approved by Ethical Approval Committee at Taif University to conduct the research with Ethical approval number (43-123).

Data entry and analysis: Data was entered on the computer using the "Microsoft Office Excel Software" program (2016) for Windows. Data was then transferred to the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) to be statistically analyzed. Descriptive statistical analysis was conducted to present the data. Categorical variables were expressed as frequencies and percentages. Numerical variables were expressed as mean and standard deviation if normally distributed. If not normally distributed, data was expressed as median and inter-quartile range (IQR).

Results

The study included 483 participants, 53.4% were males and 46.6% were females. 43.7% were in the 6th academic year, 26.5% in the 5th year, 12.4% were in the 4th year and 17.4% were interns. 16.1% of participants intend to choose ENT as a future specialty as mention in Table 1. As illustrated in Table 2, 94.6% took the ENT module and test (60.2% of them had it in the 5th year, 34.0% of them had it in the 4th year and only 5.4% had it in the 6th year). 20.1% and 18.6% of participants reported the highest degree of comfort with examining and diagnosing or recognizing ENT conditions.

As illustrated in Table 2 (continued) 31.9% have never spent time in an ENT service or office as part of clinical education, while 44.5% reported spending 1-2 days on an ENT service or office and clinical education. 24.4% reported that ENT rotation only is the setting of time on an ENT service or office, while 21.3% reported that inpatient only is the setting of time on an ENT service or office.

As illustrated in Table (3) 82.2% of the participants diagnosed the first case with acute mastoiditis, and 58.8% of the participants reported that the management of the second case was evacuation and drainage of any blood or hematoma, followed by ear bolster dressing. In the 3rd case 67.9% of participants chose peritonsillar abscess as a diagnosis. 49.9% of the participants stated that the appropriate next step in the management of the 4th case would be silver nitrate cautery of Kiesselbach's plexus. In the 5th case 57.1% of participants stated that guiding the insertion of the trach tube is the part of the tracheotomy tube labelled in the image we provided in the questionnaire.

As illustrated in Table (3) (continued) 34.4% of participants stated that the appropriate step in the management of the 6th case would be a course of oral steroids, and 42.9% of participants stated that the next step in management in the 7th case is repeating canalith repositioning maneuver and providing reassurance, while in the 8th case 44.9% stated that trial of intranasal steroid is the best next step in management; finally in the 9th case 31.9% of participants stated that performing an esophagogastroduodenoscopy (EGD) is part of expected initial management, while 29.2% stated trial of proton pump inhibitor is part of expected initial management.

Table 1: Sociodemographic characteristics of participants (n=483)

Parameter	No.	%	
Gender	Male	258	53.4
	Female	225	46.6
Academic year	intern	84	17.4
	4th year	60	12.4
	5th year	128	26.5
	6th year	211	43.7
Intended specialty choice	Anaesthesia	2	.4
	Dermatology	6	1.2
	Did not decide	6	1.2
	Emergency Medicine	10	2.1
	ENT	78	16.1
	Family medicine	84	17.4
	General surgery	88	18.2
	Internal Medicine	91	18.8
	Other specialties	117	24.6

Table 2: ENT knowledge parameters (n=483)

Parameter		No.	%
Took ENT module and test	Yes	457	94.6
	No	26	5.4
If yes, in which academic year	3 rd year	2	.4
	4 th year	164	34.0
	5 th year	291	60.2
	6 th year	26	5.4
What are the modalities used in teaching? Select which apply:	Seminars and hospital visits	49	3.1
	traditional class	147	30.4
	skill labs	469	29.7
	virtual class and small group discussion	8	0.5
	hospital visits	227	46.9
	virtual class	325	67.2
	seminars	176	11.1
	small group discussions	90	5.7
	hospital visits	87	5.5
	Real classes accompanied by clinics	3	0.2
Comfortability with performing a head and neck examination on a patient	Not comfortable at all	31	6.4
	Not comfortable	66	13.7
	Neutral	135	28.0
	Comfortable	154	31.9
	Very comfortable	97	20.1
Comfortability with diagnosing or recognizing ENT conditions	Not comfortable at all	27	5.6
	Not comfortable	84	17.4
	Neutral	159	32.9
	Comfortable	123	25.5
	Very comfortable	90	18.6

Table 2: ENT knowledge parameters (n=483) -continued

Parameter		No.	%
Time spent on an ENT service or office, as part of clinical education	Never	154	31.9
	1-2 days	215	44.5
	3-4 days	42	8.7
	5-7 days	72	14.9
The setting of time on an ENT service or office	ENT rotation	118	24.4
	ENT rotation, Surgery	7	1.4
	Inpatient	103	21.3
	Inpatient, ENT rotation	11	2.3
	Inpatient, ENT rotation, Surgery	17	3.5
	Inpatient, Outpatient office	30	6.2
	Inpatient, Outpatient office, Surgery	4	.8
	Inpatient, Surgery	6	1.2
	Outpatient office	133	27.5
	Outpatient office, Surgery	16	3.3
Surgery	38	7.9	

Table 3: Participants knowledge of ENT cases

Parameter		No.	%
An 8-year-old girl is brought in with a fever of 38, 33 °C complaining of progressive ear pain and hearing loss over the past four days. On physical exam you find a tender, erythematous lesion (see above). The most likely diagnosis is:	Acute mastoiditis	396	82.0
	Hematoma	18	3.7
	Insect-bite	22	4.6
	Temporal bone trauma	16	3.3
A 20-year-old female comes in after being involved in a fight. Her outer ear exam is shown above. What is the best next step in management?	Apply a cold pack directly to the site and administer an anti-inflammatory to control swelling	86	17.8
	Apply a warm compress directly to the site	64	13.3
	Evacuation and drainage of any blood or hematoma, followed by ear bolster dressing	284	58.8
	No serious injury has been sustained. No further management needed	25	5.2
	Ultrasound of the ear	24	5.0
A 20-year-old female comes in with a 5-day history of sore throat with difficulty talking and a fever of 38.33 °C. Her oropharyngeal exam (see above) is consistent with	Enlarged lingual tonsil	118	24.4
	Gastroesophageal Reflux Disease (GERD)	12	2.5
	Herpes Simplex Virus infection	19	3.9
	Non-Hodgkin Lymphoma	6	1.2
	Peritonsillar abscess	328	67.9
A patient presents to the ED with an intractable unilateral nosebleed. After 10 minutes of pinching the sides of the nose, the bleeding stops. A few minutes later, you visualize blood coming from the anterior nasal septum. The rest of the physical exam is unremarkable. A topical vasoconstrictor is tried but also fails to stop the bleed. After completing a history, the appropriate next step would be:	Have the patient tilt his head back for 10 minutes, or until bleeding resolves	48	9.9
	Observation	79	16.4
	Perform a nasal endoscopy	75	15.5
	Silver nitrate cautery of Kiesselbach's plexus	241	49.9
	Sphenopalatine artery ligation	40	8.3
The part of the tracheotomy tube is used for:	Cleaning or replacement to remove excess secretions	80	16.6
	Enabling speaking with trach in place	58	12.0
	Guiding the insertion of the trach tube	276	57.1
	Inflation of the cuff	69	14.3

Table 3: Participants knowledge of ENT cases - continued

An otherwise healthy 45-year-old female presents with sudden unilateral deafness. Management for this condition usually includes:	A course of oral steroids	166	34.4
	CT scan	147	30.4
	Empiric trial of broad-spectrum antibiotics	98	20.3
	Observation and reassessment in 2-4 hours	72	14.9
A 68-year-old woman presents with intense feelings of the room "swaying" or moving over. The episodes last about 30 seconds, and occur every time she rolls over in bed. She has had these episodes several times in the past, and has been previously treated with repositioning maneuvers. The next step in management should include:	A short, tapering course of oral steroids	80	16.6
	Meclizine, or a similar vestibular suppressant medication	94	19.5
	Repeating canalith repositioning maneuver and providing reassurance	207	42.9
	Semi-circular canal plugging	30	6.2
	Trans tympanic steroid injection	72	14.9
A 30-year-old otherwise healthy female with no recent illness presents with complaints of persistent watery, nasal discharge and throat clearing for the past 3 months. Physical exam revealed post-nasal drip, significant cobble stoning at the back of the throat, and nasal turbinates that are grey and boggy. In addition to laboratory testing, you decide the best next step is:	A short course of broad-spectrum antibiotics	110	22.8
	Endoscopic sinus surgery	85	17.6
	Trial of intranasal steroid	217	44.9
	Trial of nonsteroidal anti-inflammatory drug	71	14.7
A patient comes in to your primary care clinic with complaints of feeling a "lump in the back of her throat", "metallic taste" in the morning, halitosis, and a hoarse voice for 3 months. She denies any change in weight, fever, or difficulty swallowing. After referral, laryngeal exam performed by ENT reveals red, swollen arytenoid mucosa. You expect initial management will include:	Obtaining a CT of the neck	124	25.7
	Performing an esophagogastroduodenoscopy (EGD)	154	31.9
	Trial of anti-histamine	64	13.3
	Trial of proton pump inhibitor	141	29.2

Discussion

College students of medical education provide medical students with the fundamental knowledge and skills they need to become general practitioners. The incidence of otolaryngologic complaints in general practice is disproportionate to the amount of otolaryngology taught in undergraduate medical education (4).

In this study, 16.1 percent of participants expressed a desire to pursue ENT as a future specialty. Previous research found that students planning to pursue a career in ENT had higher scores, basic ENT comfort, and comfort performing the H&NPE. Those intending to practice ENT are more likely to have had the most clinical exposure to the field in the Undergraduate Medical Education (UME), and the amount of clinical exposure to ENT, regardless of intended specialty, is also positively correlated with basic knowledge (5).

Previous research has found deficits in ENT competency when assessing primary care residents, with one study finding a measurable difference in basic ENT competency between primary care residents and ENT residents. These findings could indicate a lack of ENT competency among primary care residents or an increase in ENT resident competency (6).

According to our findings, 94.6 percent of those who completed the OtoHNS module and test were successful (60.2 percent of them had it in the 5th year). A national survey of all Canadian medical schools conducted in 2007 revealed that mandatory OtoHNS rotations in clerkship existed in six of sixteen (38 percent) schools, with an average rotation length of 4.6 days (7).

Another follow-up study in 2012, which surveyed the same medical schools about the clinical clerkship-rotation format, teaching methods, faculty support and development, programme strengths, and perceived barriers to rotation implementation, found that a significant proportion of Canadian medical students graduate without ever having experienced an OtoHNS clinical rotation (8).

According to a UK study, 75% of senior residents in an emergency medicine residency programme felt they had not received enough OtoHNS training in medical school (9). Another study from the United Kingdom found similar results in a survey of practising family doctors, where nearly half of the respondents felt their OtoHNS training was inadequate in both medical school and residency; 75% said they wanted more OtoHNS training (10).

In fact, in the United Kingdom, the average medical school graduate has a clinical rotation in OtoHNS for less than 1.5 weeks over a 5-year period, with up to 20% having no clinical exposure at all (11).

In the North American literature, similar findings have been reported. Another study found that 66.7 percent of residents in a Canadian family medicine residency programme received little classroom instruction, while 75.6 percent received little clinical OtoHNS instruction. Across a wide range of commonly encountered OtoHNS problems, the overall self-reported comfort level in managing OtoHNS cases was moderate. The majority of our study participants correctly answered ENT cases when it comes to diagnosing basic ear or nasal pathologies (12).

Approaches to improving medical education in ENT will necessitate extensive collaboration with medical schools to identify areas of deficiency and ways to improve. Education could be improved in particular by incorporating ENT teaching and placement into the core curriculum. This could imply more dedicated teaching time using preferred in-person pedagogical methods such as tutorials, simulations, and workshops, as well as the introduction of ENT teaching where it is not currently available. To accomplish this, we would need to hire experienced registrars or consultants as educators. Integrating medical student teaching into the curriculum of ENT registrar training would help us achieve this goal. This would be a valuable resource for medical students, as well as a way to cultivate one of the core clinical competencies that underpin surgical training (13).

Limitations

A limitation of the study was the use of a pre-designed questionnaire that could have a recall bias.

Conclusion

Saudi medical students have appropriate knowledge of basic otolaryngology. With a significant proportion of ENT complaints in general practice, it is critical that all graduating medical students, not just those entering ENT, are adequately trained in basic ENT to perform competently and be confident enough to manage or refer these patients.

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