ORIGINAL RESEARCH PAPER
Volume - 15 | Issue - 09 | September - 2026 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

# KNOWLEDGE AND PREPAREDNESS IN THE INITIAL MANAGEMENT OF ENT EMERGENCIES AMONG MBBS STUDENTS

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## ABSTRACT

**Background:** Ear, nose, and throat (ENT) emergencies are common clinical conditions requiring prompt recognition and timely initial management to prevent significant morbidity and mortality. MBBS students frequently encounter such emergencies during clinical postings and emergency duties; however, inadequate undergraduate training may affect their preparedness and confidence in managing these conditions effectively. **Objectives:** To assess the knowledge and preparedness in the initial management of ENT emergencies among MBBS students. **Materials and Methods:** A cross-sectional observational study was conducted among 748 MBBS students in a tertiary care teaching institution in India over a period of six months. Participants from first year to internship were included using convenience sampling. Data were collected using a pre-validated structured questionnaire assessing knowledge and preparedness regarding common ENT emergencies. Statistical analysis was performed using SPSS version 25.0, and $p<0.05$ was considered statistically significant. **Results:** Among 748 participants, most belonged to the 20–22 years age group (52.4%), with males constituting 53.7%. Knowledge and preparedness scores increased significantly with advancing academic year, and interns demonstrated the highest scores ($p<0.001$). Correct responses were highest for airway obstruction recognition (81.8%) and epistaxis management (70.1%), whereas poor knowledge was observed for tracheostomy emergency care (39.8%) and sudden hearing loss management (35.6%). Students with prior simulation or workshop-based training demonstrated significantly better knowledge levels than untrained students (74.8% vs. 42.9%). Overall, moderate preparedness was observed among 52.7% of participants. **Conclusion:** MBBS students demonstrated moderate overall preparedness in managing ENT emergencies, with significant deficiencies in advanced emergency management skills. Structured simulation-based training and increased clinical exposure may improve undergraduate competency and preparedness in ENT emergency care.

## KEYWORDS

ENT emergencies, MBBS students, preparedness, knowledge, airway management, otolaryngology, undergraduate medical education, emergency care.

## INTRODUCTION

ENT emergencies, including airway obstruction, epistaxis, foreign body aspiration, deep neck infections, facial trauma, and sudden hearing loss, are common acute conditions requiring prompt recognition and management to reduce morbidity and mortality.[1] Adequate knowledge of initial management is essential for MBBS students, as they frequently serve as first responders in emergency settings. Recent studies have highlighted deficiencies in undergraduate ENT emergency training and emphasized the need for structured educational programs.[2]

Airway management remains one of the most critical aspects of ENT emergencies; however, misunderstandings and inadequate practical competency among medical students and junior residents have been widely reported.[3] Simulation-based ENT emergency training has been shown to improve clinical skills, confidence, and decision-making abilities among healthcare trainees.[4] Similarly, structured airway management education programs have demonstrated significant improvement in knowledge and preparedness among medical interns.[5] Studies assessing emergency management knowledge among medical and dental students have further revealed inadequate awareness and inconsistent practical exposure to emergency scenarios.[6]

Globally, undergraduate otolaryngology education is often limited in duration and clinical exposure. Research from Canada demonstrated that many medical students perceive ENT training as insufficient for handling common emergencies independently.[7] Educational innovations such as microlearning and task-based learning strategies have shown promising outcomes in enhancing students' knowledge and clinical performance during ENT rotations.[8] Furthermore, systematic reviews have reported that short, structured teaching interventions significantly improve junior doctors' confidence and on-call preparedness in ENT emergencies.[9]

Current undergraduate curricula still face challenges in integrating comprehensive ENT emergency teaching, particularly in resource-limited settings.[10] Similar deficiencies in emergency preparedness have also been observed among dental students, suggesting broader concerns regarding emergency medical education.[11] Mentorship and early clinical exposure programs have demonstrated positive effects on students' interest, confidence, and engagement in otolaryngology training.[12]

In India, limited data exist regarding the preparedness of MBBS students in managing ENT emergencies, despite the high burden of emergency cases and restricted specialist access in many healthcare settings. Hence, this study was conducted to assess the knowledge and preparedness of MBBS students in the initial management of ENT emergencies.

## MATERIAL AND METHODS

**Study Design:** A cross-sectional observational study was conducted to assess the knowledge and preparedness in the initial management of ENT emergencies among MBBS students.

**Study Setting:** The study was carried out in the Department of Otorhinolaryngology of a tertiary care teaching hospital and affiliated medical college in India over a period of six months.

**Study Population:** The study population included MBBS students from first year to final year and internship who were enrolled in the institution during the study period.

**Sample Size:** A total of 748 MBBS students were included in the study using convenience sampling. The sample size was considered adequate to assess the level of knowledge and preparedness regarding ENT emergencies among undergraduate medical students.

**Inclusion Criteria:**

- MBBS students from first year to internship who were willing to participate

- Students present during the period of data collection
- Students who provided informed consent

**Exclusion Criteria:**

- Students who were absent during data collection
- Students unwilling to participate in the study
- Incompletely filled questionnaires

**Data Collection and Investigations:**

Data were collected using a pre-validated, structured, self administered questionnaire designed to assess knowledge and preparedness regarding the initial management of common ENT emergencies. The questionnaire included demographic details, previous exposure to ENT emergency training, knowledge regarding airway management, epistaxis, foreign body aspiration, tracheostomy care, and emergency referral practices. Preparedness and confidence levels were assessed using Likert-scale-based responses. Prior to the main study, a pilot study was conducted among 30 students to assess clarity and reliability of the questionnaire. Necessary modifications were made accordingly.

**Ethical Consideration:**

Ethical approval was obtained from the Institutional Ethics Committe. Written informed consent was taken from all participants, and confidentiality of the data was maintained.

**Statistical Analysis:**

Data were analyzed using SPSS version 25.0. Descriptive statistics and Chi-square test were applied, with $p<0.05$ considered statistically significant.

## RESULTS

**Table 1: Sociodemographic and Academic Profile of Study Participants (n = 748)**

| Variable | Category | Frequency (n) | Percentage (%) | p-value |
|---|---|---|---|---|
| Age (years) | 17–19 | 186 | 24.9 | 0.038 |
| | 20–22 | 392 | 52.4 | |
| | 23–25 | 170 | 22.7 | |
| Gender | Male | 402 | 53.7 | 0.029 |
| | Female | 346 | 46.3 | |
| Academic Year | First Year | 128 | 17.1 | <0.001 |
| | Second Year | 142 | 19.0 | |
| | Third Year Part I | 154 | 20.6 | |
| | Third Year Part II | 146 | 19.5 | |
| | Internship | 178 | 23.8 | |
| Socioeconomic Status (Modified Kuppuswamy Scale) | Upper | 118 | 15.8 | 0.021 |
| | Upper Middle | 344 | 46.0 | |
| | Lower Middle | 196 | 26.2 | |
| | Upper Lower | 72 | 9.6 | |
| | Lower | 18 | 2.4 | |

Table 1 shows the sociodemographic and academic profile of the 748 study participants. The majority belonged to the 20–22 years age group (52.4%), followed by 17–19 years (24.9%) and 23–25 years (22.7%). Male students constituted 53.7% of participants. Interns formed the largest academic group (23.8%), while most students belonged to the upper middle socioeconomic class (46.0%) according to the Modified Kuppuswamy Scale.

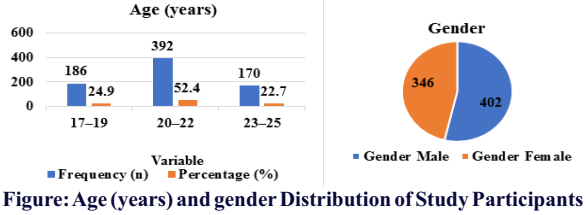


**Figure: Age (years) and gender Distribution of Study Participants**

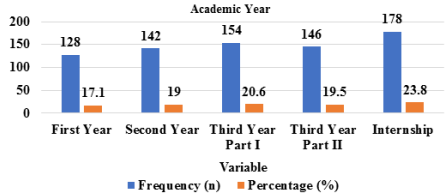


**Figure: Academic Profile of Study Participants**

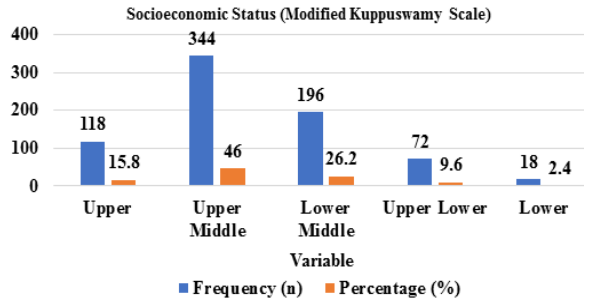


**Figure: Socioeconomic Status of Study Participants**

**Table 2: Mean Knowledge and preparedness Score According to Academic Year**

| Academic Year | Mean Knowledge Score (Out of 20) Mean ± SD | Mean Preparedness Score (Out of 10) Mean ± SD | p-value |
|---|---|---|---|
| First Year | 8.2 ± 2.1 | 3.4 ± 1.3 | <0.001 |
| Second Year | 10.1 ± 2.4 | 4.6 ± 1.5 | |
| Third Year Part I | 12.8 ± 2.6 | 5.8 ± 1.7 | |
| Third Year Part II | 14.2 ± 2.3 | 6.9 ± 1.4 | |
| Internship | 16.1 ± 2.0 | 8.1 ± 1.2 | |

Table 2 demonstrates the mean knowledge and preparedness scores of participants according to academic year. Both knowledge and preparedness scores showed a progressive increase with advancing academic level. Interns had the highest mean knowledge score (16.1 ± 2.0) and preparedness score (8.1 ± 1.2), whereas first-year students had the lowest scores. The association was found to be statistically significant ($p<0.001$).

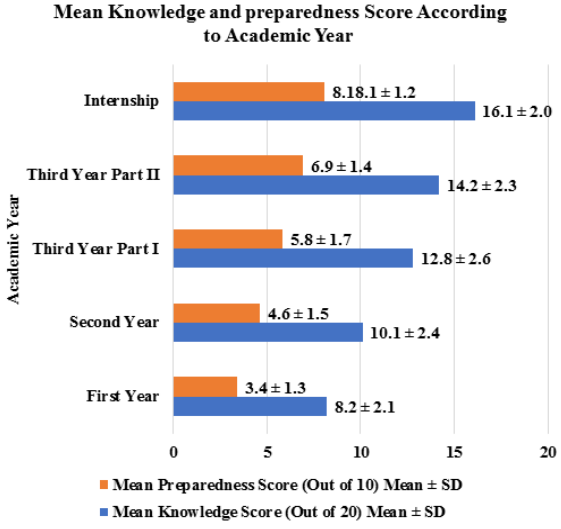


**Figure: Mean Knowledge and preparedness Score According to Academic Year**

**Table 3: Knowledge Regarding Initial Management of Common ENT Emergencies Among MBBS Students (n = 748)**

| ENT Emergency Scenario | Correct Response n (%) | Incorrect Response n (%) | p-value |
|---|---|---|---|
| Initial management of epistaxis | 524 (70.1) | 224 (29.9) | <0.001 |
| Recognition of airway obstruction | 612 (81.8) | 136 (18.2) | <0.001 |
| Management of foreign body aspiration | 486 (65.0) | 262 (35.0) | 0.004 |
| Tracheostomy emergency care | 298 (39.8) | 450 (60.2) | <0.001 |
| Recognition of peritonsillar abscess | 344 (46.0) | 404 (54.0) | 0.017 |
| Initial management of sudden hearing loss | 266 (35.6) | 482 (64.4) | <0.001 |

Table 3 depicts the knowledge of MBBS students regarding the initial management of common ENT emergencies. The highest correct response was observed for recognition of airway obstruction (81.8%),

followed by initial management of epistaxis (70.1%). Knowledge regarding tracheostomy emergency care (39.8%) and sudden hearing loss management (35.6%) was comparatively poor. All associations were statistically significant.

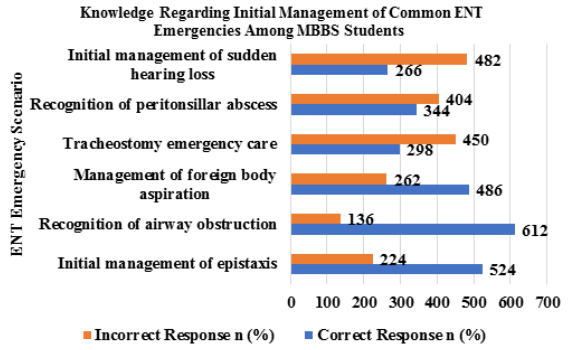


**Figure: Knowledge Regarding Initial Management of Common ENT Emergencies Among MBBS Students**

**Table 4: Preparedness and Confidence in Handling ENT Emergencies Among Participants**

| Preparedness Variable | Confident n (%) | Not Confident n (%) | p-value |
|---|---|---|---|
| Handling epistaxis independently | 418 (55.9) | 330 (44.1) | 0.012 |
| Performing basic airway support | 462 (61.8) | 286 (38.2) | 0.003 |
| Managing ENT foreign body cases | 304 (40.6) | 444 (59.4) | <0.001 |
| Assisting in tracheostomy emergencies | 196 (26.2) | 552 (73.8) | <0.001 |
| Identifying life-threatening ENT emergencies | 488 (65.2) | 260 (34.8) | 0.024 |

Table 4 illustrates the preparedness and confidence levels of participants in handling ENT emergencies. Most students were confident in identifying life-threatening ENT emergencies (65.2%) and performing basic airway support (61.8%). However, confidence was considerably lower for managing foreign body cases (40.6%) and assisting in tracheostomy emergencies (26.2%). The observed associations were statistically significant.

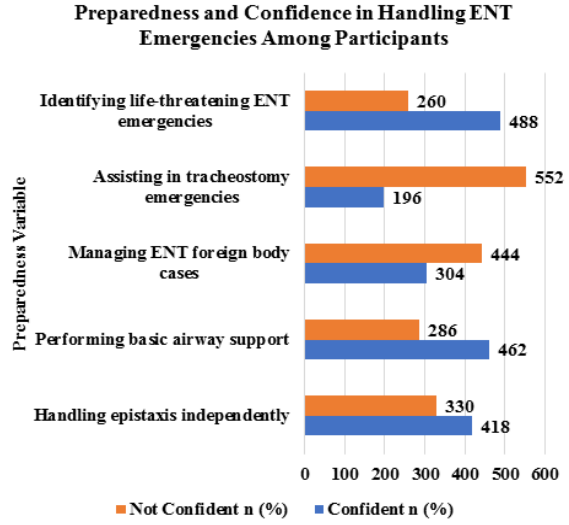


**Figure: Preparedness and Confidence in Handling ENT Emergencies Among Participants**

**Table 5: Association Between Previous ENT Emergency Training and Overall Knowledge Level**

| Previous ENT Emergency Training | Adequate Knowledge n (%) | Inadequate Knowledge n (%) | Total | p-value |
|---|---|---|---|---|
| Received simulation/workshop training (n=286) | 214 (74.8) | 72 (25.2) | 286 | <0.001 |
| No prior structured training (n=462) | 198 (42.9) | 264 (57.1) | 462 | |
| Total | 412 (55.1) | 336 (44.9) | 748 | |

Table 5 shows the association between previous ENT emergency training and overall knowledge level among MBBS students. Participants who had received simulation or workshop-based training demonstrated significantly higher adequate knowledge levels (74.8%) compared to those without prior structured training (42.9%). This association was found to be statistically significant (p<0.001).

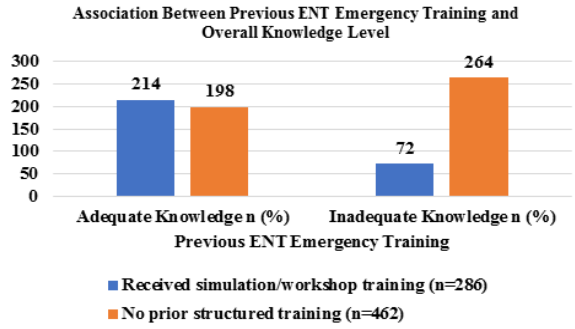


**Figure: Association Between Previous ENT Emergency Training and Overall Knowledge Level**

**Table 6: Overall Preparedness Levels Among MBBS Students for Initial Management of ENT Emergencies**

| Preparedness Grade | Score Range | Frequency (n) | Percentage (%) | p-value |
|---|---|---|---|---|
| Good Preparedness | 8–10 | 182 | 24.3 | <0.001 |
| Moderate Preparedness | 5–7 | 394 | 52.7 | |
| Poor Preparedness | <5 | 172 | 23.0 | |

Table 6 depicts the overall preparedness levels of MBBS students regarding the initial management of ENT emergencies. More than half of the participants demonstrated moderate preparedness (52.7%), while 24.3% showed good preparedness. Poor preparedness was observed among 23.0% of students. The difference in preparedness levels was statistically significant (p<0.001).

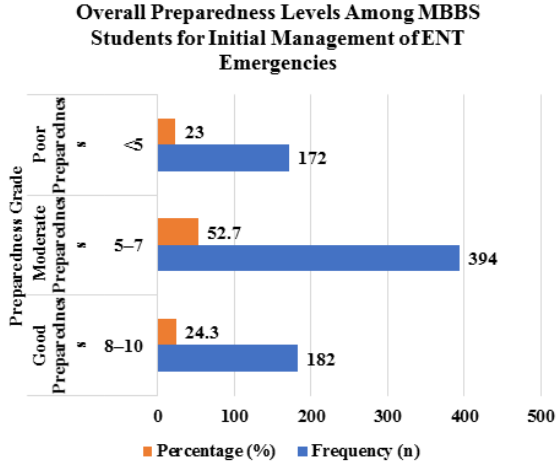


**Figure: Overall Preparedness Levels Among MBBS Students for Initial Management of ENT Emergencies**

## DISCUSSION

The sociodemographic and academic distribution showed that most participants belonged to the 20–22 years age group (52.4%), followed by 17–19 years (24.9%), with males constituting 53.7% of the sample. Similar participant characteristics were reported by Elnaem et al. (2024)[6] and Mohideen et al. (2021)[11], who included predominantly undergraduate medical and dental students within comparable age categories. Alghamdi et al. (2024)[1] also evaluated mainly senior medical students and interns, comparable to the larger proportion of clinical-year students and interns observed here. Rosvall et al. (2020)[7] similarly focused on advanced undergraduate students. Unlike most referenced studies, socioeconomic distribution was additionally evaluated using the Modified Kuppuswamy Scale, where upper middle class students constituted 46.0% of participants.

Knowledge and preparedness scores demonstrated a statistically significant increase with advancing academic year (p<0.001). Interns achieved the highest mean knowledge score (16.1 ± 2.0) and

preparedness score (8.1 ± 1.2), whereas first-year students showed the lowest scores. Similar improvement following increased educational exposure was observed by Goutham et al. (2023)[4], where simulation-based ENT emergency training significantly improved post-test performance among interns. Basnet et al. (2024)[5] also reported significant enhancement in airway management knowledge and confidence after simulation-based education (P<0.001). Sedaghatkar et al. (2023)[8] demonstrated significantly higher post-test scores among students receiving microlearning interventions. In contrast, Rosvall et al. (2020)[7] reported low confidence levels despite clinical exposure among senior medical students.

Knowledge regarding ENT emergency management varied across different clinical scenarios. The highest correct response was observed for recognition of airway obstruction (81.8%), followed by epistaxis management (70.1%) and foreign body aspiration management (65.0%). Similar findings were reported by Elnaem et al. (2024)[6], where 78.6% of students correctly identified airway and emergency management protocols. Alghamdi et al. (2024)[1] also demonstrated adequate knowledge regarding epistaxis but lower competency in managing peritonsillar abscess and sudden sensorineural hearing loss, comparable to the lower correct responses observed here for these emergencies. Mohideen et al. (2021)[11] similarly found poor emergency management knowledge among students. In contrast, Sedaghatkar et al. (2023)[8] reported significantly improved procedural competency following structured educational interventions.

Confidence and preparedness in handling ENT emergencies varied across different emergency scenarios. The highest confidence was observed in identifying life-threatening ENT emergencies (65.2%) and performing basic airway support (61.8%), whereas only 26.2% of participants felt confident assisting in tracheostomy emergencies. Similar findings were reported by Basnet et al. (2024)[5], who demonstrated significant improvement in confidence and airway management skills following simulation-based education among interns. Goutham et al. (2023)[4] also observed improved psychomotor skills and confidence after simulation-based ENT emergency training. Al-Khafaji et al. (2025)[9] reported that structured ENT teaching interventions consistently enhanced preparedness among junior doctors. In contrast, Rosvall et al. (2020)[7] found generally low confidence among medical students despite undergraduate ENT exposure.

A statistically significant association was observed between prior ENT emergency training and knowledge level (p<0.001). Among students who had received simulation or workshop-based training, 74.8% demonstrated adequate knowledge compared to 42.9% among those without structured training. Similar observations were reported by Goutham et al. (2023)[4], where interns exposed to simulation-based teaching achieved significantly better post-test scores than those receiving conventional lectures alone. Basnet et al. (2024)[5] also demonstrated substantial improvement in knowledge and confidence after airway management training. Sedaghatkar et al. (2023)[8] reported significantly superior procedural performance and knowledge scores following microlearning interventions. Cainelli et al. (2025)[2] similarly emphasized that inadequate structured training remains a major contributor to poor ENT emergency preparedness globally.

Overall preparedness assessment revealed that 52.7% of participants demonstrated moderate preparedness, while 24.3% showed good preparedness and 23.0% exhibited poor preparedness regarding initial ENT emergency management. Similar findings were observed by Alghamdi et al. (2024)[1], where preparedness and confidence levels varied according to educational exposure and clinical experience among senior medical students and interns. Elnaem et al. (2024)[6] also reported satisfactory preparedness regarding emergency fundamentals, although inconsistencies in clinical decision-making persisted. Tokarz et al. (2021)[3] identified major deficiencies in airway emergency preparedness before structured educational intervention despite prior clinical exposure. Mohideen et al. (2021)[11] similarly reported inadequate emergency management competency among healthcare students. In contrast, Sethia et al. (2020)[12] demonstrated significantly greater preparedness among students participating in structured mentorship programs.

## CONCLUSION

The study demonstrated that MBBS students possessed variable levels of knowledge and preparedness regarding the initial management of ENT emergencies, with competency improving progressively across advancing academic years. Although participants showed relatively better understanding of airway obstruction, epistaxis, and basic airway support, substantial deficiencies were identified in tracheostomy emergency care, sudden hearing loss management, and handling of ENT foreign body emergencies. The findings also established a significant association between structured ENT emergency training and improved knowledge and preparedness scores, highlighting the educational value of simulation-based teaching, workshops, and supervised clinical exposure. A considerable proportion of students exhibited only moderate preparedness, indicating that existing undergraduate training remains insufficient for developing comprehensive emergency competency. These observations emphasize the need for competency-based ENT emergency education within the MBBS curriculum, particularly in resource-constrained Indian healthcare settings where junior doctors frequently provide first-line emergency care before specialist referral.

## REFERENCES


1. Alghamdi MA. Exploring the Knowledge and Preparedness for Otolaryngology Emergencies among Senior Medical Students and Interns at Al-Baha University. Bahrain Medical Bulletin. 2024 Sep 1;46(3).
2. Cainelli F, Acharya V. Ear, Nose, and Throat (ENT) Emergency Training in Undergraduate Medical Education: Global Status, Gaps, and Curriculum Reform Priorities. Cureus. 2025 Nov 17;17(11).
3. Tokarz E, Szymanowski AR, Loree JT, Muscarella J. Gaps in training: misunderstandings of airway management in medical students and internal medicine residents. Otolaryngology–Head and Neck Surgery. 2021 May;164(5):938-43.
4. Goutham MK, Saldanha M, Bhat VS, Rajeshwary A, Vincent MJ, Ravikumar A. Simulation-based training in ear, nose and throat skills and emergencies. Brazilian Journal of Otorhinolaryngology. 2023 Jan 1;89(1):144-51.
5. Basnet S, Shrestha SP, Shrestha R, Shrestha AP, Shrestha A, Sahu S, Mhatre B, Silwal P. Effect of simulation-based emergency airway management education on the knowledge, skills and perceived confidence of medical interns. Annals of Medicine and Surgery. 2024 Sep 1;86(9):5191-8.
6. Elnaem IS, Alghris AM, Alenzi LH, Alshammari HA, Alanazi RB, Alshammari AM, Alsalimi OY, ALnasrallah AA, Alkhalil BR, Albaker LW, Alharbi NM. Assessment of Knowledge and Practices of Medical Emergencies in Medical and Dental Students of the University of Ha'il, Saudi Arabia: A Cross-Sectional Study. Cureus. 2024 Sep 30;16(9).
7. Rosvall BR, Singer Z, Fung K, Chin CJ. Do medical students receive adequate otolaryngology training? A Canadian perspective. Annals of Otology, Rhinology & Laryngology. 2020 Nov;129(11):1095-100.
8. Sedaghatkar F, Mohammadi A, Mojtahedzadeh R, Gandomkar R, Rabbani Anari M, Dabiri S, Tajdini A, Zoafa S. Enhancing medical students' knowledge and performance in otolaryngology rotation through combining microlearning and task-based learning strategies. International Journal of Environmental Research and Public Health. 2023 Mar 3;20(5):4489.
9. Al-Khafaji MH, Alabdalhussein A, Al-Dabbagh S, Altalaa A, Alhumairi G, Abdulwahid Z, Al-Hasani A, Baban J, Al-Ogaidi M, Hamid E, Mair M. The impact of short, structured ENT teaching interventions on junior doctors' confidence and on-call preparedness: a systematic review. InHealthcare 2025 Nov 13 (Vol. 13, No. 22, p. 2886). MDPI.
10. Patel B, Saeed SR, Smith S. The provision of ENT teaching in the undergraduate medical curriculum: a review and recommendations. The Journal of Laryngology & Otology. 2021 Jul;135(7):610-5.
11. Mohideen K, Thayumanavan B, Krithika C, Nazia R, Murali B, Pravda C, Arshadha M. The knowledge and awareness of medical emergencies and management among dental students. Journal of Pharmacy and Bioallied Sciences. 2021 Jun 1;13(Suppl 1):S741-7.
12. Sethia R, Sheehan CC, Danforth D, Essig Jr G, Teknos TN, Elmaraghy CA. ENT mentorship program for preclinical medical students. Otolaryngology–Head and Neck Surgery. 2020 Aug;163(2):198-203.