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Original Article

ASSESSMENT OF KNOWLEDGE AND PRACTICE REGARDING AIRWAY AND BREATHING MANAGEMENT AMONG HEALTHCARE PROFESSIONAL STUDENTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Airway and breathing management are essential components of emergency care, requiring adequate knowledge and practical skills among healthcare professionals. This study assessed the knowledge and practice of airway and breathing management among healthcare professionals.

Methods: A descriptive cross-sectional study was conducted among 519 healthcare professionals using a structured, self-administered questionnaire. Data were analyzed using descriptive statistics and the Chi-square test to determine the association between demographic variables and knowledge and practice levels, with statistical significance set at $p < 0.05$.

Results: Overall, 59.2% of participants had poor knowledge, whereas 57.0% demonstrated good practice regarding airway and breathing management. Knowledge was significantly associated with department, familiarity with airway management, curriculum exposure, and source of knowledge ($p < 0.05$). Practice showed significant associations with gender, year of study, familiarity, curriculum exposure, BLS/ACLS training, and source of knowledge ($p < 0.05$).

Conclusion: Although participants demonstrated satisfactory practical skills, inadequate theoretical knowledge highlights the need for structured curriculum integration, simulation-based training, and regular competency assessments to improve airway and breathing management and enhance patient safety in emergency care.

Keywords: Airway, Breathing Management, Health care professionals.

Introduction:

Airway management is one of the most critical components of emergency and critical care practice. The maintenance of a patent airway and effective ventilation represents the first priority in the assessment and stabilization of critically ill or injured patients. Early recognition of airway compromise, followed by prompt intervention, is essential to prevent hypoxaemia, cerebral hypoxia, cardiac arrest, and death [1]. International resuscitation guidelines consistently emphasize airway assessment as the initial step in emergency patient management because delayed intervention substantially increases morbidity and mortality [2]. Consequently, every healthcare professional involved in patient care should possess adequate knowledge and practical competence in airway assessment, oxygen administration, ventilation techniques, and airway device utilization.

Airway obstruction may occur due to trauma, altered consciousness, neurological disorders, respiratory illnesses, cardiac emergencies, drug overdose, postoperative complications, or foreign body aspiration. Patients with compromised airway reflexes are particularly vulnerable to airway obstruction caused by posterior displacement of the tongue, aspiration of gastric contents, excessive secretions, or facial trauma [3]. Appropriate management requires rapid assessment, proper patient positioning, manual airway manoeuvres, oxygen supplementation, suctioning, and, when indicated, the use of adjunctive airway devices such as oropharyngeal airways, nasopharyngeal airways, supraglottic airway devices, or endotracheal intubation [4]. The effectiveness of these interventions depends not only on technical proficiency but also on the healthcare provider's ability to make timely clinical decisions under stressful conditions.

The increasing complexity of emergency healthcare has transformed airway management into a multidisciplinary responsibility involving physicians, nurses, respiratory therapists, anaesthesia technologists, physiotherapists, emergency medical personnel, and other allied healthcare professionals. Advances such as video laryngoscopy, supraglottic airway devices, high-flow nasal oxygen therapy, and standardized difficult airway algorithms have significantly improved patient outcomes [5].

Nevertheless, inappropriate airway assessment, inadequate technical skills, and delayed intervention continue to contribute to preventable adverse events in emergency departments, intensive care units, and prehospital settings [6]. Competency in airway and breathing management requires a combination of theoretical knowledge, psychomotor skills, clinical judgement, communication, and teamwork. Undergraduate healthcare curricula generally provide theoretical instruction in airway anatomy, respiratory physiology, oxygen therapy, cardiopulmonary resuscitation, and emergency patient management. However, the extent of practical exposure varies considerably between educational institutions and healthcare disciplines. Consequently, students may acquire procedural skills during clinical postings without fully understanding the scientific principles that guide airway assessment and management [7].

Simulation-based education has emerged as one of the most effective educational strategies for improving airway management competency. High-fidelity simulation allows learners to practise airway assessment, bag-mask ventilation, cardiopulmonary resuscitation, and advanced airway procedures within a controlled environment before managing actual patients. Several studies have demonstrated that repeated simulation training significantly improves technical performance, clinical confidence, teamwork, and decision-making while reducing procedural errors [8]. Furthermore, competency-based assessment enables educators to identify individual learning needs and reinforce essential clinical skills through repeated practice. Despite improvements in healthcare education, several investigations have reported persistent deficiencies in airway management knowledge among undergraduate healthcare students and newly qualified professionals. Studies conducted among nurses, medical students, paramedics, and allied healthcare professionals have shown that although practical performance frequently improves with increasing clinical exposure, theoretical knowledge remains suboptimal [9,10]. Factors including academic year, curriculum exposure, previous clinical experience, Basic Life Support (BLS) certification, Advanced Cardiac Life Support (ACLS) training, simulation-based education, and continuing professional development have been identified as important determinants of competency [11].

In India, the rapid expansion of allied health sciences programmes has increased the demand for healthcare professionals capable of providing safe and effective emergency care. Nevertheless, evidence regarding competency in airway and breathing management among undergraduate healthcare professional students remains limited, particularly across multiple healthcare disciplines within a single institution. Evaluating current levels of knowledge and practice is therefore essential for identifying educational gaps, strengthening curriculum design, and developing targeted educational interventions that improve patient safety. The present study was undertaken to assess the knowledge and practice regarding airway and breathing management among healthcare professional students enrolled in Nursing, Physiotherapy, and Allied Health Sciences programmes at a tertiary teaching institution. The study also aimed to determine the demographic and educational factors associated with knowledge and practice levels. The findings are expected to provide evidence that may assist educators in strengthening competency-based education, enhancing simulation-based learning, and improving the preparedness of future healthcare professionals to manage airway emergencies effectively.

MATERIALS AND METHODS

Study Design and Study Setting: A questionnaire-based cross-sectional study was conducted to assess the knowledge and practice regarding airway and breathing management among healthcare professional students. The study was carried out at ACS Medical College and Hospital, Dr. M.G.R. Educational and Research Institute, Chennai, Tamil Nadu, India, between November 2025 and April 2026. The study adhered to the principles of the Declaration of Helsinki for research involving human participants and followed institutional ethical guidelines throughout the study period.

Ethical Approval: Ethical approval was obtained from the Institutional Ethics Committee of ACS Medical College and Hospital, Dr. M.G.R. Educational and Research Institute before commencement of the study (Approval No. 342/2025/IEC/ACSMCH). Participation was entirely voluntary. Written informed consent was obtained electronically from all participants prior to questionnaire administration. Confidentiality and anonymity of participant information were

maintained throughout the study, and all collected data were used exclusively for research purposes.

Study Population: The study population consisted of undergraduate healthcare professional students from the Faculty of Allied Health Sciences, Nursing, and Physiotherapy. Students enrolled in clinical years of their respective programmes were invited to participate because they had received formal teaching and clinical exposure related to airway and breathing management.

Sample Size and Sampling Technique: A total of 519 healthcare professional students participated in the study. Participants were recruited using a random sampling technique to ensure adequate representation from different healthcare disciplines. The study included students from Nursing, Physiotherapy, and Allied Health Sciences.

Eligibility Criteria:

Inclusion Criteria: Participants fulfilling the following criteria were included:

1. Undergraduate healthcare professional students aged 18 years or above.
2. Students undergoing clinical postings during the study period.
3. Students willing to participate and provide informed consent.
4. Students who completed the questionnaire in its entirety.

Exclusion Criteria: The following participants were excluded:

1. Students younger than 18 years.
2. Students from the Pharmacy programme, as airway and breathing management was not included as a major competency within their curriculum.
3. Students who declined participation.
4. Questionnaires with incomplete responses.

Study Instrument

Data were collected using a structured self-administered questionnaire developed after reviewing previously published literature and adapting items from the questionnaire used by Nigatu et al. The questionnaire was modified to suit the objectives of the present study while maintaining content relevance and clarity.

The questionnaire consisted of three sections:

Section I: This section collected participant information including: Age , Gender, Department, Year of study, Familiarity with airway and breathing management, Curriculum exposure, Previous Basic Life Support (BLS) or Advanced Cardiac Life Support (ACLS) training , Previous clinical experience, Primary source of knowledge

Section II: Knowledge regarding airway and breathing management was assessed using 10 multiple-choice questions covering: Basic airway anatomy, Recognition of airway obstruction, Manual airway manoeuvres, Oxygen therapy, Airway adjuncts, Ventilation techniques, Emergency airway management principles.

Each correct response was awarded one mark, whereas incorrect responses received zero marks. Total knowledge scores were calculated by summing individual responses. Participants were subsequently categorized into good knowledge and poor knowledge according to the predetermined scoring criteria.

Section III: Practice regarding airway and breathing management was evaluated using 10 structured questions assessing routine clinical practice, procedural confidence, emergency response, airway positioning, oxygen administration, airway device utilization, and adherence to recommended clinical protocols. Responses were scored using the same binary scoring system, assigning one point for appropriate practice and zero points for inappropriate practice. Total practice scores were calculated and categorized as good practice or poor practice according to predefined cut-off values.

Data Collection Procedure

The questionnaire was converted into an electronic Google Forms format and distributed through institutional email groups and official WhatsApp groups of eligible healthcare professional students. The first page of the questionnaire contained the participant information sheet and informed consent statement. Participants could proceed only after providing informed consent electronically. To prevent duplicate responses, Google Forms was configured to accept only one submission from each participant. Completed responses were automatically stored in a secure Google Sheets database, ensuring data integrity and minimizing manual data entry errors.

Statistical Analysis

The collected data were exported into Microsoft Excel for preliminary verification and subsequently analysed using Statistical Package for the Social Sciences (SPSS) version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize participant characteristics and study variables. Continuous variables were presented as mean ± standard deviation (SD), whereas categorical variables were expressed as frequencies and percentages. Associations between demographic variables and knowledge or practice levels were assessed using the Pearson Chi-square test. Statistical significance was considered at a p-value <0.05. The findings were presented using appropriately formatted tables and figures to facilitate interpretation.

RESULTS

Demographic Characteristics

A total of 519 healthcare professionals participated in this study. The results are presented according to the study objectives, including the overall level of knowledge and practice regarding airway and breathing management, departmental distribution, and the association of knowledge and practice with selected demographic variables.

Overall Knowledge Towards Airway and Breathing Management

Table 1 present the overall knowledge level of the participants regarding airway and breathing management. Among the 519 healthcare professionals, 212 (40.8%) demonstrated good knowledge, while 307 (59.2%) exhibited poor knowledge. The overall mean knowledge score was 11.12 ± 2.84, indicating that although a substantial proportion possessed adequate theoretical knowledge, the majority of participants had insufficient knowledge regarding airway and breathing management.

Knowledge Level	Frequency (N)	Percentage (%)
Good Knowledge	212	40.8
Poor Knowledge	307	59.2
Total	**519**	**100**

Table 1. Distribution of Overall Knowledge towards Airway and Breathing Management

Overall Practice Towards Airway and Breathing Management

As shown in Table 2, 296 (57.0%) participants demonstrated good practice, whereas 223 (43.0%) had poor practice. The overall mean practice score was 3.91 ± 2.11, suggesting that more than half of the healthcare professionals reported satisfactory airway and breathing management practices.

Practice Level	Frequency (N)	Percentage (%)
Good Practice	296	57
Poor Practice	223	43
Total	**519**	**100**

Table 2. Distribution of Overall Practice towards Airway and Breathing Management

Knowledge Level According to Department

The distribution of knowledge according to department is presented in Table 3. Participants from the Physiotherapy department demonstrated the highest proportion of good knowledge (68.4%) with the highest mean knowledge score (13.00). This was followed by Nursing participants, among whom 53.0% had good knowledge with a mean score of 11.84. In contrast, participants from Allied Health Sciences showed the lowest level of good knowledge (35.8%) and the lowest mean knowledge score (10.81). Overall, the mean knowledge score across all participants was 11.12, indicating moderate knowledge regarding airway and breathing management.

Department	Total N	Good N (%)	Poor N (%)	Mean score
Nursing	115	61 (53.0%)	54 (47.0%)	11.84
Physiotherapy	18	13 (68.4%)	6 (31.6%)	13.00
Allied health science	385	138 (35.8%)	247 (64.2%)	10.81
Total	**519**	**212 (40.8%)**	**307 (59.2%)**	**11.12**

Table 3. Distribution of Knowledge by Department

Practice Level According to Department

The departmental distribution of practice is summarized in Table 4. Although practice levels varied across departments, the proportion of participants demonstrating good practice remained above 50% in all three disciplines. Physiotherapy participants reported the highest proportion of good practice, followed by nursing participants, while allied health science participants showed comparatively lower practice scores.

Department	Total N	Good N (%)	Poor N (%)	Mean Practice Score
Nursing	115	68 (59.1%)	47 (40.9%)	4.02
Physiotherapy	19	13 (68.4%)	6 (31.6%)	4.74
Allied Health Science	385	215 (55.8%)	170 (44.2%)	3.84
Total	**519**	**296 (57.0%)**	**223 (43.0%)**	**3.91**

Table 4. Distribution of Practice by Department

Association Between Knowledge Level and Demographic Variables

The association between knowledge level and selected demographic characteristics is presented in Table 5. No statistically significant association was observed between gender and knowledge level ($\chi^2 = 1.202$, $p = 0.273$) or between age group and knowledge ($\chi^2 = 3.247$, $p = 0.355$). A highly significant association was identified between department and knowledge level ($\chi^2 = 20.800$, $p < 0.001$). Physiotherapy participants demonstrated the highest proportion of good knowledge (68.4%), followed by nursing participants (53.0%), whereas allied health science participants exhibited the lowest proportion (35.8%). The association between year of study and knowledge was not statistically significant ($\chi^2 = 9.317$, $p = 0.054$), although first-year and final-year students demonstrated relatively higher knowledge levels than second-year students. Participants who reported being familiar with airway and breathing management demonstrated significantly better knowledge than those who were unfamiliar ($\chi^2 = 10.018$, $p = 0.002$). Likewise, participants with curriculum exposure had significantly higher knowledge levels than those without such exposure ($\chi^2 = 8.267$, $p = 0.004$). No statistically significant association was observed between completion of BLS/ACLS training and knowledge ($\chi^2 = 0.111$, $p = 0.739$) or between prior clinical experience and knowledge ($\chi^2 = 1.252$, $p = 0.535$). The primary source of knowledge showed a statistically significant association with knowledge level ($\chi^2 = 8.224$, $p = 0.042$). Participants who received simulation-based (mannequin) training demonstrated relatively higher knowledge than those relying primarily on clinical postings.

Association Between Practice Level and Demographic Variables

The association between practice level and demographic variables is presented in Table 6. A statistically significant association was observed between gender and practice level ($\chi^2 = 13.497$, $p < 0.001$). Female participants demonstrated significantly better practice than their male counterparts. No significant association was found between age group and practice ($\chi^2 = 1.944$, $p = 0.584$) or between department and practice level ($\chi^2 = 4.248$, $p = 0.373$). The year of study was significantly associated with practice ($\chi^2 = 17.285$, $p = 0.002$). Third-year students demonstrated comparatively better practice than students in the other academic years.

VARIABLE	CATEGORY	TOTAL N	GOOD KNOWLEDGE N (%)	POOR KNOWLEDGE N (%)	P-VALUE
GENDER	FEMALE	327	140 (42.8%)	187 (57.2%)	0.273
	MALE	192	72 (37.5%)	120 (62.5%)	
AGE GROUP	18-20 YEARS	389	155 (39.8%)	234 (60.2%)	0.355
	21-23 YEARS	121	51 (42.1%)	70 (57.9%)	
	24-26 YEARS	8	5 (62.5%)	3 (37.5%)	
	ABOVE 26 YEARS	1	1 (100.0%)	0 (0.0%)	
DEPARTMENT	NURSING	115	61 (53.0%)	54 (47.0%)	**0.000**
	PHYSIOTHERAPY	19	13 (68.4%)	6 (31.6%)	
	ALLIED HEALTH SCIENCE	385	138 (35.8%)	247 (64.2%)	
YEAR OF STUDY	FIRST YEAR	38	20 (52.6%)	18 (47.4%)	0.054
	SECOND YEAR	137	43 (31.4%)	94 (68.6%)	
	THIRD YEAR	283	119 (42.0%)	164 (58.0%)	
	FINAL YEAR	19	10 (52.6%)	9 (47.4%)	
	INTERNSHIP	42	20 (47.6%)	22 (52.4%)	
FAMILIARITY	YES	404	180 (44.6%)	224 (55.4%)	**0.002**
	NO	113	31 (27.4%)	82 (72.6%)	
CURRICULUM EXPOSURE	YES	370	166 (44.9%)	204 (55.1%)	**0.004**
	NO	147	45 (30.6%)	102 (69.4%)	
BLS/ACS COURSE	YES	182	72 (39.6%)	110 (60.4%)	0.739
	NO	335	139 (41.5%)	196 (58.5%)	
PRIOR EXPERIENCE	NO EXPERIENCE	244	98 (40.2%)	146 (59.8%)	0.535
	OBSERVED ONLY	230	92 (40.0%)	138 (60.0%)	
	EXPERIENCED	43	21 (48.8%)	22 (51.2%)	
KNOWLEDGE SOURCE	LECTURE	335	145 (43.3%)	190 (56.7%)	**0.042**
	CLINICAL POSTINGS	107	31 (29.0%)	76 (71.0%)	
	STIMULATION-BASED (MANNEQUIN)	61	29 (47.5%)	32 (52.5%)	
	WORKSHOPS OR CME	14	6 (42.9%)	8 (57.1%)	

Table 5. Association of Knowledge Level with Demographic Variables

VARIABLE	CATEGORY	TOTAL N	GOOD PRACTICE N (%)	POOR PRACTICE N (%)	P-VALUE
GENDER	FEMALE	327	207 (63.3%)	120 (36.7%)	**0.000**
	MALE	192	89 (46.4%)	103 (53.6%)	
AGE GROUP	18-20 YEARS	389	222 (57.1%)	167 (42.9%)	0.584
	21-23 YEARS	121	67 (55.4%)	54 (44.6%)	
	24-26 YEARS	8	6 (75.0%)	2 (25.0%)	
	ABOVE 26 YEARS	1	1 (100.0%)	0 (0.0%)	
DEPARTMENT	NURSING	115	68 (59.1%)	47 (40.9%)	0.373
	PHYSIOTHERAPY	19	13 (68.4%)	6 (31.6%)	
	ALLIED HEALTH SCIENCE	385	215 (55.8%)	170 (44.2%)	
YEAR OF STUDY	FIRST YEAR	38	25 (65.8%)	13 (34.2%)	**0.002**
	SECOND YEAR	137	59 (43.1%)	78 (56.9%)	
	THIRD YEAR	283	179 (63.3%)	104 (36.7%)	
	FINAL YEAR	19	9 (47.4%)	10 (52.6%)	
	INTERNSHIP	42	24 (57.1%)	18 (42.9%)	
FAMILIARITY	YES	404	258 (63.9%)	146 (36.1%)	**0.000**
	NO	113	37 (32.7%)	76 (67.3%)	
CURRICULUM EXPOSURE	YES	370	225 (60.8%)	145 (39.2%)	0.008
	NO	147	70 (47.6%)	77 (52.4%)	
BLS/ACS COURSE	YES	182	90 (49.5%)	92 (50.5%)	**0.013**
	NO	335	205 (61.2%)	130 (38.8%)	
PRIOR EXPERIENCE	NO EXPERIENCE	244	140 (57.4%)	104 (42.6%)	0.981
	OBSERVED ONLY	230	131 (57.0%)	99 (43.0%)	
	EXPERIENCED	43	24 (55.8%)	19 (44.2%)	**0.000**
KNOWLEDGE SOURCE	LECTURE	335	217 (64.8%)	118 (35.2%)	
	CLINICAL POSTINGS	107	42 (39.3%)	65 (60.7%)	
	STIMULATION-BASED (MANNEQUIN)	61	28 (45.9%)	33 (54.1%)	
	WORKSHOPS OR CME	14	8 (57.1%)	6 (42.9%)	

Table 6. Association of Practice Level with Demographic Variables

Participants who were familiar with airway and breathing management exhibited significantly better practice than those who were unfamiliar ($\chi^2 = 33.639$, $p < 0.001$). Similarly, curriculum exposure was significantly associated with improved practice ($\chi^2 = 6.943$, $p = 0.008$). Completion of a BLS/ACLS course also demonstrated a statistically significant association with practice ($\chi^2 = 6.167$, $p = 0.013$).

However, prior clinical experience was not significantly associated with practice ($\chi^2 = 0.038$, $p = 0.981$). The source of knowledge showed a highly significant association with practice ($\chi^2 = 25.089$, $p < 0.001$). Participants who primarily learned through lectures demonstrated the highest proportion of good practice, whereas those depending mainly on clinical postings exhibited comparatively poorer practice levels.

DISCUSSION

Airway and breathing management is a fundamental component of emergency and critical care, as early recognition and appropriate intervention are essential for maintaining adequate oxygenation and preventing morbidity and mortality [1–4]. Competency in airway management requires not only theoretical knowledge but also practical skills developed through repeated clinical exposure and simulation-based training [5].

The present study assessed the knowledge and practice of airway and breathing management among healthcare professionals. The findings revealed that 59.2% of participants had poor knowledge, whereas 57.0% demonstrated good practice. This discrepancy suggests that although many participants acquire practical skills through clinical exposure, their theoretical understanding remains inadequate. Similar knowledge–practice gaps have been reported among healthcare professionals, emphasizing the need for competency-based education and continuous professional training [6,8,9,14].

Our findings are consistent with the study conducted by Nigatu et al.[6], which reported that only 45.1% of emergency nurses possessed adequate knowledge regarding airway and breathing management despite their clinical responsibilities. Likewise, Kelkay et al.[16] observed insufficient knowledge and practice regarding basic life support among nurses, highlighting deficiencies in emergency preparedness across healthcare settings. These findings indicate that inadequate airway management knowledge remains a widespread educational challenge.

The present study demonstrated a significant association between knowledge level and department, familiarity with airway and breathing management, curriculum exposure, and source of knowledge. Participants who received curriculum-based teaching and simulation training demonstrated significantly better knowledge than those without such exposure. These findings support recommendations from current airway management guidelines, which advocate structured education, repeated simulation sessions, and competency assessments to improve clinical performance [5,17].

Practice level was significantly associated with gender, year of study, familiarity, curriculum exposure, BLS/ACLS training, and source of knowledge. Participants who reported greater educational exposure and familiarity achieved significantly better practice scores, suggesting that repeated learning opportunities improve psychomotor skills and clinical confidence. Similar observations have been reported in studies evaluating emergency airway competency, where structured training programs improved procedural success and reduced airway-related complications [8,9]. Simulation-based education has become an essential component of airway management training because it allows healthcare professionals to develop technical and non-technical skills in a safe environment. Previous studies have shown that simulation improves decision-making, teamwork, communication, and adherence to airway algorithms[12,13]. Furthermore, the systematic review by Chowdhury et al.[7] concluded that cognitive aids, including checklists and airway algorithms, significantly improve provider performance, reduce decision-making time, enhance procedural success, and promote effective teamwork during emergency airway management. These findings reinforce the importance of incorporating simulation and cognitive aids into undergraduate healthcare curricula.

Interestingly, the present study identified a statistically significant association between BLS/ACLS training and practice; however, participants without formal certification demonstrated relatively better practice. This unexpected finding may be explained by differences in clinical exposure, recency of training, participant characteristics, or unequal distribution of certified participants. Similar observations have been reported in previous studies, where practical competency was influenced not only by certification but also by repeated clinical exposure and ongoing refresher training [8,19-25].

Overall, the findings emphasize that curriculum exposure, simulation-based learning, and familiarity with airway management contribute substantially to improving both knowledge and practice. Current international airway management guidelines recommend regular competency-based education, multidisciplinary simulation, and periodic recertification to maintain clinical proficiency and ensure patient safety during airway emergencies [15,17,18].

Limitations

This study has several limitations. It was conducted at a single institution using a cross-sectional design, which limits the ability to establish causal relationships. Participants from different healthcare disciplines were not equally represented, and pharmacy students were excluded because airway and breathing management is not included in their curriculum. The relatively modest sample size may also limit the generalizability of the findings. Future multicenter studies involving larger and more balanced samples are recommended. Additionally, interventional studies employing pre-test and post-test designs should evaluate the effectiveness of simulation-based education, structured airway management curricula, and mandatory BLS/ACLS certification on improving knowledge retention and clinical performance.

Conclusion: This study assessed the knowledge and practice of airway and breathing management among healthcare professionals and identified important gaps in competency. Although the majority of participants demonstrated good practice (57.0%), 59.2% exhibited poor theoretical knowledge, indicating a knowledge–practice gap. Significant associations were observed between knowledge and department, familiarity with airway and breathing management, curriculum exposure, and source of knowledge. Practice was significantly associated with gender, year of study, familiarity, curriculum exposure, BLS/ACLS training, and source of knowledge. The findings emphasize that structured educational exposure and regular competency-based training are essential for strengthening airway and breathing management skills among healthcare professionals. Integrating simulation-based learning, high-fidelity mannequin training, and standardized airway management protocols into undergraduate healthcare curricula may improve both theoretical understanding and practical competency.

Furthermore, periodic refresher courses, mandatory Basic Life Support (BLS) and Advanced Cardiovascular Life Support (ACLS) certification, and continuous clinical skill assessments should be encouraged to enhance preparedness for airway emergencies. Future multicenter studies with larger and more representative samples are recommended to evaluate the long-term effectiveness of simulation-based education and competency-based training programs. Strengthening airway and breathing management education is expected to improve clinical decision-making, enhance patient safety, and contribute to better outcomes in emergency and critical care settings.

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