

Review Article

The evolving role of nurses in extracorporeal membrane oxygenation therapy

Emad Ahmed Hakami*, Ahlam Hassan Alsomali, Mashael Eid Alharbi

Heart Center of Excellence, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia

Received: 20 September 2025

Revised: 24 September 2025

Accepted: 25 September 2025

*Correspondence:

Dr. Emad Ahmed Hakami,

E-mail: nurseemad@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Nurses managing extracorporeal membrane oxygenation (ECMO) have shifted from operating under a perfusionist-led framework to assuming full responsibility for ECMO care. This transition reflects a growing demand for sustainable, team-based ECMO delivery models. To review the evolving role of nurses in ECMO therapy, with emphasis on clinical responsibilities, education, training and leadership, this narrative review synthesizes findings from original studies and program evaluations describing nurse-led ECMO models, nursing competencies and educational initiatives. Nurses now monitor circuits, adjust settings, manage anticoagulation and lead emergency responses. Structured training programs, simulation exercises and competency validation have facilitated this role expansion. Studies report improved ECMO capacity, patient safety and program efficiency. Nurse-led ECMO models enhance resource use, team integration and care quality. Investment in training and interprofessional collaboration is vital for sustaining and expanding nursing roles in ECMO programs.

Keywords: Critical care nursing, Extracorporeal membrane oxygenation, ECMO, Nurse-led ECMO

INTRODUCTION

ECMO is a lifesaving therapy for those with severe cardiac or respiratory failure.¹ Historically, ECMO management was the responsibility of perfusionists and physicians.² The rising demand for ECMO services and the necessity for a more sustainable workforce model have prompted the growth of nurses into ECMO management positions.³

This transition has required the implementation of structured training programs, competency evaluations and innovative care models that redefine the responsibilities of ECMO nurses.⁴ The implementation of nurse-led ECMO programs has shown advantages, including increased resource use, enhanced continuity of care and decreased costs.⁴ This review examines the progression of nurse roles in ECMO management, emphasizing clinical responsibility, education, training and leadership.

THE SHIFT FROM PERFUSIONIST-LED TO NURSE-LED ECMO MODELS

The evolution responsibilities of nurses in ECMO management have received much focus in recent years, especially with the establishment of nurse-led ECMO programs.⁴ The increasing demand for ECMO services has rendered the participation of nurses in the management and supervision of ECMO therapy a desirable strategy.⁴ Nurse-led initiatives augment the capacity of ECMO services, improve patient care and optimize resource utilization.⁵ Numerous research have investigated the efficacy and practicality of these models, emphasizing their advantages in enhancing patient outcomes, augmenting ECMO capacity and decreasing expenses. Cavarocchi et al performed retrospective cohort research at a single institution, revealing that nurse-led ECMO programs could substantially decrease healthcare expenditures while upholding excellent patient safety standards.⁶ Their

research indicated that with proper training, nurses may take on vital responsibilities in controlling ECMO circuits and implementing critical alterations, resulting in more efficient resource utilization without compromising the quality of care.⁶

Odish et al, investigated the effects of a nurse-run ECMO program, noting a significant enhancement in ECMO capacity without compromising patient care quality.⁷ Their findings indicate that enabling nurses to assume greater responsibility can enhance ECMO service delivery in high-demand settings with constrained resources.⁷

Ross et al, conducted a qualitative study in an Australian hospital, examining ICU nurses' perspectives of their increased involvement in ECMO care.⁸ The study indicated that ICU nurses viewed the increased responsibilities favorably, acknowledging an opportunity to refine their skills and make a more substantial contribution to patient care.⁸ Their perceptions corresponded with the overarching advantages of nurse-led programs, affirming that nurses are suitably equipped to assume expanded responsibilities in ECMO care.⁸

Collectively, these studies support the idea that nurse-led ECMO programs can serve as an effective and sustainable framework for enhancing ECMO capacity, increasing patient outcomes and maximizing hospital resources. The increasing global demand for ECMO services has the capacity to revolutionize ECMO care and elevate the position of nurses in critical care settings.

EXPANSION OF CLINICAL RESPONSIBILITIES

Technical management of extracorporeal membrane oxygenation circuits

The responsibilities of nurses in ECMO management have significantly increased, especially in monitoring circuit function, a duty previously reserved for perfusionists. Hernandez and Casida emphasized this transition, observing that nurses are now directly engaged in modifying essential ECMO parameters, including pump speeds, flow rates and anticoagulant control.⁹ This move facilitates prompt bedside decision-making, improving patient care efficiency and diminishing reliance on perfusionists for standard modifications.⁹ Nurses are assuming an increasingly crucial role in ensuring circuit stability and enhancing patient outcomes.⁹

In addition to circuit modifications, Hijeh underscored the necessity for nurses to develop a thorough comprehension of ECMO technology.¹⁰ Effective ECMO management necessitates technical expertise and the capacity to evaluate and incorporate patient-specific ventilation requirements.¹⁰ Nurses must balance circuit functionality with respiratory support strategies, ensuring that ECMO therapy is customized to the patient's changing condition.¹⁰ This degree of engagement necessitates a robust understanding of extracorporeal physiology, sophisticated

hemodynamic monitoring and prompt clinical decision-making.¹⁰

As nurses assume these enhanced responsibilities, comprehensive training programs and continuous competency evaluations are essential for guaranteeing safe and effective ECMO treatment. This transition signifies the increasing importance of nursing in high-acuity critical care environments, illustrating the benefits of interdisciplinary cooperation in enhancing patient care.

Patient assessment and hemodynamic monitoring

Ross et al highlighted the critical role of nurses in the ongoing evaluation and care of ECMO patients, underscoring their need to oversee cannula integrity, circuit functionality and overall patient stability.⁸ Due to the intricacies of ECMO therapy, nurses must consistently evaluate critical parameters, such as hemodynamic stability, oxygenation levels and initial signs of circuit issues.⁸ Their proficiency in detecting nuanced alterations in patient status is essential for avoiding negative outcomes and facilitating prompt intervention.⁸

Peeler et al emphasized the critical function of nurses in performing high-acuity assessments, especially in recognizing and addressing complications such as clot formation, bleeding, air embolism and hemolysis.¹¹ These complications can emerge abruptly and, if not addressed expeditiously, may result in serious consequences.¹¹ Nurses are essential for early detection by meticulously monitoring laboratory data, evaluating for indications of hemolysis or thrombosis and maintaining circuit integrity.¹¹ Their capacity to combine clinical expertise with real-time patient information facilitates rapid, informed decision-making, hence enhancing patient outcomes.¹¹

Collectively, these studies underscore the essential function of nurses in ECMO treatment. Their proficiency in evaluating the patient and the circuit guarantees early identification of any difficulties, facilitating prompt action and diminishing the chance of life-threatening occurrences. Ongoing education, practical training and interdisciplinary teamwork augment nurses' capacity to deliver superior care in this intricate, high-pressure setting.

Emergency response and troubleshooting

A prompt and efficient response to ECMO events is a crucial nursing ability that directly influences patient outcomes. Due to the complexity of ECMO care, nurses must possess technical expertise and crucial decision-making abilities to promptly and effectively address life-threatening issues. Anderson et al, performed a research assessing nurses' competence in managing ECMO-related emergencies via simulation-based evaluations.¹² Their findings underscored the essential importance of technical proficiency and behavioral skills, including communication, collaboration and situational awareness,

in effectively managing high-stress crisis situations.¹² The study emphasized the necessity for nurses to not only understand ECMO mechanics but also to exhibit competence in high-pressure environments, collaborate with interdisciplinary teams and make swift judgments to ensure patient stability.¹² Toy et al recently documented the expedited training and upskilling of nurses to handle ECMO crises under the COVID-19 epidemic.¹³ In response to an enormous influx of critically sick patients necessitating ECMO support, healthcare organizations were compelled to swiftly augment their staff and train nurses to manage crises related to this advanced therapy.¹³ Their findings emphasized the imperative for organized, expedited training programs that allow nurses to swiftly adjust to elevated patient loads while upholding a superior standard of care.¹³ The research emphasized the significance of practical simulation and immediate learning experiences in equipping nurses to respond with confidence to ECMO emergencies.¹³ Collectively, these studies underscore the necessity of continuous education, scenario-based training and crisis management exercises to guarantee that nursing personnel maintain proficiency in addressing ECMO emergencies, hence enhancing patient safety and clinical outcomes.

Decision-making in weaning and decannulation

Although physicians have historically directed the ECMO weaning procedure, nurses are progressively assuming active roles in evaluating patient preparedness for weaning and decannulation. This developing position illustrates the increasing acknowledgment of nurses' proficiency in handling ECMO patients and their capacity to significantly influence clinical decision-making. Research conducted by Koons and Siebert and Ross et al, underscores the increasing involvement of nurses in these deliberations, accentuating their essential contributions to establishing the optimal timing and methodology for weaning.^{8,13} Nurses enhance patient safety and results during the ECMO management tapering phase by collaborating with physicians and other healthcare team members in a holistic, team-based decision-making approach.^{8,13}

EDUCATION AND TRAINING FOR EXTRACORPOREAL MEMBRANE OXYGENATION CIRCUITS NURSES

Structured extracorporeal membrane oxygenation circuits training programs

The expanded spectrum of nursing duties in the management of difficult ECMO patients has underscored the necessity for specialist ECMO training programs. As ECMO technology advances and its utilization broadens, it is imperative for nursing personnel to acquire comprehensive knowledge and abilities specific to this sophisticated life support system. Gannon et al, provide significant insights into the necessity of standardized ECMO curriculum for critical care nurses.¹⁵ In their prospective cohort study, they evaluated the efficacy of

various curricula in improving nurses' knowledge and practical skills.¹⁵ The research included 301 nurses in a fundamental ECMO course and 107 nurses in an advanced ECMO course, highlighting the significance of tiered training programs tailored to varying levels of proficiency.¹⁵ These findings emphasize that a universal strategy is insufficient, rather, customized educational pathways are essential for cultivating proficient practitioners capable of navigating the intricacies of ECMO therapy.

Additionally, Shaban et al performed a quasi-experimental study at Cairo University Hospital to evaluate the effect of instructional programs on nurses' knowledge and practical skills regarding ECMO.¹⁶ Their research shown that organized, methodical teaching programs substantially enhanced nurses' knowledge and practical abilities, leading to improved patient care and clinical results.¹⁶ The research findings endorse the incorporation of comprehensive, structured educational modules into hospital ECMO programs. Such programs provide nurses with the specialized expertise required to operate ECMO equipment safely and assure the ongoing development of their clinical competence. Ongoing education is essential for upholding superior care standards and guaranteeing patient safety in the critical context of ECMO therapy. The findings from both trials underscore the necessity of structured ECMO training programs to ensure nurses are sufficiently equipped to manage critically ill patients on ECMO.

Simulation-based and hands-on training

Simulation-based learning has emerged as an essential element of ECMO nursing education, offering a dynamic environment for nurses to cultivate and enhance their abilities in a controlled, risk-free context. Anderson et al, assessed the effect of high-fidelity simulation training on ECMO emergency readiness, demonstrating notable enhancements in nurses' technical and behavioral competencies.¹² The study revealed that realistic, hands-on simulations enhance nurses' preparedness for emergency scenarios by fortifying their decision-making, crisis management and technical skills under duress.¹²

Hernandez and Casida conducted nurse-led ECMO simulation training at a trauma hospital, engaging more than 50 nurses in skill enhancement activities.⁹ This approach improved technical expertise and communication within diverse teams, essential components in ECMO management.⁹ Conducting training in high-stakes conditions underscores the efficacy of simulation as a mechanism for skill development, guaranteeing that nurses are adequately equipped to deliver optimal care in actual ECMO scenarios.⁹

Competency-based education models

Competency-based frameworks are vital for evaluating ECMO proficiency, guaranteeing that nurses have the

requisite abilities and understanding to handle complex ECMO situations. Melnikov et al, and Ross et al, underscored the essential significance of competency validation by continuous training and evaluations.^{17,18} These frameworks offer a systematic method for assessing nurses' technical competencies, cognitive capacities and collaboration skills, guaranteeing their comprehensive readiness for the complex requirements of ECMO administration.^{17,18} Competency-based approaches, through the integration of continuous learning and performance assessments, uphold high standards of care, facilitate professional development and ensure that nurses are prepared to address the growing problems of ECMO therapy.^{17,18}

Multi-tiered and continuous education approaches

Comprehensive ECMO education is crucial for cultivating a proficient and adaptable workforce equipped to address the challenges of high-acuity patient care. Research has examined many training methodologies, ranging from systematic, long-term development frameworks to expedited educational tactics intended for emergencies.

Sheasby et al, underscored the need of a multi-tiered training framework that enables nurses to progress from novice to expert ECMO specialists.¹⁹ Their retrospective analysis emphasized the necessity for consistent educational trajectories that correspond with clinical requirements, guaranteeing proficiency at every phase of professional development.¹⁹ Implementing a planned progression framework enables healthcare organizations to augment individual competence and overall program efficacy, hence enhancing patient outcomes.

Toy et al, investigated the efficacy of expedited ECMO training programs instituted during the COVID-19 epidemic.¹³ Their research indicated that brief, targeted education might rapidly augment the workforce, providing nurses with essential competencies to oversee ECMO patients in high-stress settings.¹³ This method demonstrated significant utility in crisis scenarios, highlighting the capacity of flexible training strategies to enhance the ECMO workforce while upholding superior care standards.

COMPETENCY DEVELOPMENT AND SKILL MAINTENANCE

Core competencies for extracorporeal membrane oxygenation circuits nursing

ECMO nurses necessitate a multifaceted skill set to guarantee optimal patient care and system management. Critical competencies encompass troubleshooting circuit malfunctions, successfully responding to emergencies, evaluating patient preparedness for weaning and decannulation and engaging in quality improvement initiatives and research endeavors. Furthermore, they must collaborate with physicians and multidisciplinary teams to

improve patient outcomes, conduct advanced hemodynamic assessments and interventions to optimize circulatory support and exhibit robust crisis management skills, making pivotal decisions under pressure to ensure patient safety and treatment effectiveness.^{8,19}

Ongoing assessment and skills revalidation

Maintaining ECMO proficiency necessitates regular skills evaluations and continuous competency validation to guarantee safe and effective patient treatment. Hackmann et al, underscored the necessity of biannual revalidation of ECMO skills for adult cardiac ICU nurses, noting that regular assessments reinforce essential information, improve technical expertise and guarantee ongoing competency in the management of ECMO patients.²⁰ Consistent training and evaluations enhance clinical proficiency and lead to improve patient outcomes by minimizing the likelihood of errors in critical scenarios.

LEADERSHIP AND TEAM INTEGRATION

Nurse-led extracorporeal membrane oxygenation circuits teams and program management

The responsibilities of ECMO nurses have progressed from conventional bedside care to encompass leadership and advanced practice roles. Cavarocchi et al and Odish et al reported nurse-led ECMO models wherein nurses assumed major responsibility for patient treatment and program oversight, illustrating the feasibility and efficacy of this strategy.^{6,7} These models demonstrate how proficient ECMO nurses may facilitate care coordination, guarantee compliance with protocols and propel quality enhancement activities.

Additionally, Ross et al highlighted the emergence of specialized advanced practitioner roles in ECMO.¹⁸ These roles empower nurses to assume a proactive leadership position in program development, protocol execution and staff training, hence enhancing the overall growth and sustainability of ECMO programs.¹⁸ Integrating leadership roles into ECMO nursing allows healthcare systems to boost workforce flexibility, maximize resource usage and improve patient outcomes through nurse-led innovation and knowledge.

Interdisciplinary collaboration and education

Effective ECMO nursing necessitates robust cooperation and communication skills to facilitate smooth collaboration among multidisciplinary team members. Alshammari et al, underscored the essential function of nurses collaborating with perfusionists, physicians and respiratory therapists to enhance patient care.²¹ Nurses play a crucial role in ECMO education at numerous institutions, mentoring new personnel and providing practical training to improve team proficiency. Hernandez and Casida emphasized the teaching function of ECMO nurses, noting that nurse educators have assumed

leadership in simulation-based ECMO training.⁹ Through the integration of high-fidelity simulations, they establish an ongoing learning environment that enhances clinical decision-making, technological competencies and crisis management for critical care teams.⁹ This strategy enhances interdisciplinary teamwork and elevates the efficacy of the ECMO therapy, hence improving patient outcomes.

Quality improvement and research participation

Nurses are playing a more significant role in quality improvement activities designed to enhance ECMO patient outcomes. Their participation include not only direct patient care but also the formulation and execution of evidence-based methods that enhance ECMO program efficiency and patient safety. Ross et al, underscored the crucial function of ECMO specialist nurses in developing evidence-based best practices, performing regular audits and enhancing clinical protocols.⁸ These activities

guarantee that ECMO care adheres to the most recent research and optimal practices, thereby sustaining elevated care standards and accommodating the changing requirements of critically ill patients.⁸ Through active involvement in quality improvement initiatives, ECMO nurses facilitate the ongoing assessment of clinical practices and the enhancement of patient care pathways. Moreover, Peeler et al observed that nurses play a crucial role in advancing research and innovation in ECMO therapy.¹¹ Nurses contribute to data gathering and analysis, facilitating fresh insights into ECMO management, pinpointing areas for enhancement and evaluating innovative care delivery methods.¹¹ This engagement in research not only propels the science of ECMO forward but also enables nurses to influence the formulation of policies and practices that directly affect patient outcomes. ECMO nurses play a crucial role in research and quality enhancement, ensuring the field adapts to emerging challenges and facilitates improved, personalized care for patients needing extracorporeal support.

Table 1: Evolution of nurse roles in ECMO management.

Clinical responsibility	Traditional role (perfusionist-led model)	Expanded role in nurse-led model	Reported impact/outcome	Supporting references
Circuit monitoring and adjustments	Perfusionists adjusted pump speed, flows and sweep gas	Nurses now monitor and adjust settings directly	Faster bedside decision-making, improved safety	Cavarocchi et al ⁶ , Odish et al ⁷
Anticoagulation management	Perfusionists/physicians primarily managed	Nurses monitor labs, titrate anticoagulation	Enhanced patient safety and continuity	Cavarocchi et al ⁶ , Odish et al ⁷
Hemodynamic and patient assessment	Physicians held main responsibility	Nurses continuously assess stability, detect complications	Early recognition of clot, bleeding, hemolysis	Ross et al ⁸
Emergency response and troubleshooting	Perfusionists managed emergencies	Nurses lead crisis management and coordinate team	Improved preparedness via simulation training	Anderson et al ¹²
Weaning and decannulation decisions	Physician-directed process	Nurses actively participate in readiness assessment	Team-based decisions, smoother weaning	Ross et al ⁸ , Koons et al ¹⁴
Leadership and program integration	Limited to medical staff	Nurses lead education, quality improvement projects, team coordination	Increased capacity, efficiency and resource use	Cavarocchi et al ⁶

Table 2: Evidence from studies on nurse-led ECMO programs.

Author/Year	Study design	Main findings	Implications
Cavarocchi et al⁶	Retrospective cohort, single center	Nurse-led ECMO program reduced costs while maintaining safety	Demonstrates cost-effectiveness of nurse-led model
Odish et al⁷	Retrospective, single center	Nurse-run ECMO program expanded capacity without compromising care	Supports scalability in high-demand settings

Continued.

Author/Year	Study design	Main findings	Implications
Ross et al ⁸	Qualitative study, ICU nurses' perspectives	Nurses valued expanded ECMO role and contribution to patient care	Positive staff perception and sustainability
Hernandez et al ⁹	Simulation-based training study	Nurse practitioners led ECMO simulations; improved technical and communication skills	Validates training models for preparedness
Toy et al ¹³	Rapid training during COVID-19	Nurses upskilled quickly to manage crises with ECMO	Shows adaptability and value in emergencies
Peeler et al ¹¹	Commentary/review	Nurses essential in recognizing complications and expanding scope	Emphasizes clinical safety and program efficiency

CONCLUSION

Over the past decade, there has been a notable paradigm shift in ECMO management, with nurses taking on more autonomous and impactful roles within ECMO programs. As global healthcare systems confront the increasing demand for extracorporeal life support, nurses have proven their capacity to competently and safely manage ECMO patients, encompassing bedside monitoring and leadership roles that facilitate program development, education and protocol enhancement. Their enhanced responsibilities in managing ECMO circuits, supervising patient care and coordinating with multidisciplinary teams have demonstrated their critical importance in achieving favorable patient outcomes, even in the most intricate clinical situations.

This transition to nurse-led ECMO program improves patient safety and care provision while presenting an opportunity to reconfigure ECMO programs worldwide. As the function of nurses in ECMO care progresses, ongoing investment in systematic education, competency assessment and advanced training is essential. By providing nurses with continuous professional development and the necessary tools to excel in these positions, healthcare systems may effectively incorporate nurses into ECMO programs globally, hence enhancing the sustainability and accessibility of ECMO services.

This evolution highlights the potential for further breakthroughs in critical care nursing, as nurses innovate and excel in specific fields such as ECMO. Empowering nurses with more responsibility enables institutions to enhance care delivery and cultivate a culture of continual learning and development. With the expansion of nurse-led ECMO programs, prospects for significant innovation in extracorporeal support are anticipated, positioning nurses at the vanguard of novel practices, research and technology that improve patient outcomes. This transition reflects the growing competencies of nurses and the possibility for continued advancement in the critical care domain, facilitating excellence and innovation in the future of ECMO management.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

- Aokage T. Extracorporeal membrane oxygenation for acute respiratory distress syndrome. *Journal of Intensive Care*. 2015;3(1):79.
- Daly KJ, Camporota L, Barrett NA. An international survey: The role of specialist nurses in adult respiratory extracorporeal membrane oxygenation. *Nurs Critical Care*. 2016;22(5):305–11.
- Sheasby J. The role of the extracorporeal membrane oxygenation specialists' impact on intensive care unit staff retention. *Nursing in Critical Care*. 2025;30(3):47.
- Daly KJ, Camporota L, Barrett NA. An international survey: The role of specialist nurses in adult respiratory extracorporeal membrane oxygenation. *Nurs Crit Care*. 2016;22(5):305–11.
- Shaffi D, Driver K, Shaw Núñez E. Nurses' experience of an extracorporeal membrane oxygenation (ECMO) clinical support team during the COVID-19 pandemic: A service evaluation. *Nurs Crit Care*. 2022;28(6):1176–83.
- Cavarocchi N, Wallace S, Hong E, Tropea A, Byrne J, Pitcher H, et al. A cost-reducing extracorporeal membrane oxygenation (ECMO) program model: A single institution experience. *Perfusion*. 2014;30(2):148–53.
- Odish M, Yi C, Tainter C, Najmaii S, Ovando J, Chechel L, et al. The implementation and outcomes of a nurse-run Extracorporeal Membrane Oxygenation Program, a retrospective single-center study. *Critical Care Explorations*. 2021;3(6):980.
- Ross P, Sheldrake J, Ilic D, Watterson J, Berkovic D, Pilcher D, et al. An exploration of intensive care nurses' perceptions of workload in providing extracorporeal membrane oxygenation (ECMO) support: A descriptive qualitative study. *Australian Critical Care*. 2024;2:827.
- Hernandez L, Casida J. Acute care nurse practitioner-led extracorporeal membrane oxygenation simulation

- training. AACN Advanced Critical Care. 2021;32(4):461–7.
10. Hijjeh M. ECMO Nurse Specialist: Qatar experience. *Qatar Medical J.* 2017;2017(1):55.
11. Peeler A, Gleason KT, Ferrell B, Battista V, Klinedinst R, Cho S-M, et al. Extracorporeal membrane oxygenation: Opportunities for expanding nurses' roles. *AACN Adv Crit Care.* 2021;32(3):341–5.
12. Anderson JM, Murphy AA, Boyle KB, Yaeger KA, Halamek LP. Simulating extracorporeal membrane oxygenation emergencies to improve human performance. Part II: Assessment of technical and behavioral skills. *Simul Health.* 2006;1(4):228–32.
13. Toy B, Emmarco A, Lester L, Lohan-Mullens M, Ottoson E, Garofalo T, et al. Rapid ECMO training for nurses in response to the COVID-19 pandemic. *J Heart Lung Transpl.* 2021;40(4):98.
14. Koons B, Siebert J. Extracorporeal membrane oxygenation as a bridge to lung transplant: Considerations for critical care nursing practice. *Crit Care Nurse.* 2020;40(3):49–57.
15. Gannon WD, Craig L, Netzel L, Mauldin C, Troutt A, Warhooover M, et al. Curriculum to introduce critical care nurses to extracorporeal membrane oxygenation. *Am J Crit Care.* 2020;29(4):262–9.
16. Shaban M, Warda Y, Ali FS, El-Bary AA, Mohamed AM. Effect of educational program about care of patients connected to extracorporeal membrane oxygenation (ECMO) on nurses' knowledge and practices. *Medical J Cairo Univer.* 2019;87(4):1141–7.
17. Melnikov S, Furmanov A, Gololobov A, Atrash M, Broyer C, Gelkop M, et al. Recommendations from the Professional Advisory Committee on Nursing Practice in the care of ECMO-supported patients. *Crit Care Nurse.* 2021;41(5):59.
18. Ross P, Watterson J, Fulcher BJ, Linke NJ, Nicholson AJ, Ilic D, et al. Nursing workforce, education and training challenges to implementing extracorporeal membrane oxygenation services in Australian intensive care units: A qualitative substudy. *Australian Crit Care.* 2023;36(1):114–8.
19. Sheasby J, Kraiss S, Afzal A, George T. Standardizing education for bedside ECMO nurses by utilizing a multi-tiered approach. *ASAIO J.* 2023;69(3):70.
20. Hackmann AE, Wiggins LM, Grimes GP, Fogel RM, Schenkel FA, Barr ML, et al. The utility of nurse-managed extracorporeal life support in an adult cardiac intensive care unit. *Ann Thoracic Surg.* 2017;104(2):510–4.
21. Alshammari MA, Vellolikalam C, Alfeeli S. Nurses' perception of their role in extracorporeal membrane oxygenation care: A qualitative assessment. *Nursing Crit Care.* 2020;27(2):251–7.

Cite this article as: Hakami EA, Alsomali AH, Alharbi ME. The evolving role of nurses in extracorporeal membrane oxygenation therapy. *Int J Res Med Sci* 2025;13:4470-6