

CADTH Reference List

Extracorporeal Membrane Oxygenation for Adults and Children With Severe Hypoxic and Hypercarbic Respiratory Failure

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Key Message

- Nine primary qualitative reports and 1 mixed-methods report were identified that addressed the experiences and perspectives of adults or children with extracorporeal membrane oxygenation or their family members and health care providers.

Research Question

What qualitative literature is available on the experiences and perspectives of adults and children with severe hypoxic and hypercarbic respiratory failure on being offered/offering, receiving, and recovering from extracorporeal membrane oxygenation and their families and health care provider?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE and PsycINFO via OVID, and CINAHL via Embase. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concept was extracorporeal membrane oxygenation. CADTH-developed search filters were applied to limit retrieval to qualitative studies. Where possible, retrieval was limited to the human population. The search was also limited to English-language documents published between January 1, 2010 and May 5, 2021. Internet links were provided, where available.

Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed.

Results

A total of 355 citations were retrieved from the electronic literature search. Nine primary qualitative reports¹⁻⁹ and 1 mixed-methods report¹⁰ were identified that addressed the research question. References of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

Table 1: Selection Criteria

Criteria	Description
Sample	Adults and children with severe hypoxic and hypercarbic respiratory failure, their family members, and health care providers
Phenomenon of interest	Extracorporeal membrane oxygenation (veno-venous and veno-arterial)
Design	Any qualitative design
Evaluation	Views and experiences of being offered/offering, receiving, and recovering from extracorporeal membrane oxygenation
Research type	Primary qualitative studies; qualitative component of mixed-methods studies (excluding surveys)

References

1. Primary Qualitative Studies Hadler RA, Clapp JT, Chung JJ, Gutsche JT, Fleisher LA. Escalation and withdrawal of treatment for patients on extracorporeal membrane oxygenation: a qualitative study. *Ann Surg.* 2021;04:04. [PubMed](#)
2. Wirpsa MJ, Carabini LM, Neely KJ, Kroll C, Wocial LD. Mitigating ethical conflict and moral distress in the care of patients on ECMO: impact of an automatic ethics consultation protocol. *J Med Ethics.* 2021;13:13. [PubMed](#)
3. Alshammari MA, Velloolikalam C, Alfeeli S. Nurses' perception of their role in extracorporeal membrane oxygenation care: a qualitative assessment. *Nurs Crit Care.* 2020;28:28. [PubMed](#)
4. Kroger Y, Stoffel G, Jeitziner MM, Bischofberger I, van Holten K. Zwischen Himmel und Holle: Erfahrungen von Eltern mit einem kritisch kranken Kind mit extrakorporaler Membranoxygenierung (ECMO) - Eine qualitative-explorative Studie mit Paarinterviews. *Pflege.* 2020;33(6):375-383. [PubMed](#)
5. Wrigley C, Straker K, Nusem E, Fraser JF, Gregory SD. Nursing challenges in interactions with patients receiving mechanical circulatory and respiratory support. *J Cardiovasc Nurs.* 2018;33(5):E10-E15. [PubMed](#)
6. Tramm R, Ilic D, Murphy K, Sheldrake J, Pellegrino V, Hodgson C. Experience and needs of family members of patients treated with extracorporeal membrane oxygenation. *J Clin Nurs.* 2017;26(11-12):1657-1668. [PubMed](#)
7. Chen KH, Tsai FC, Tsai CS, Yeh SL, Weng LC, Yeh LC. Problems and health needs of adult extracorporeal membrane oxygenation patients following hospital discharge: a qualitative study. *Heart Lung.* 2016;45(2):147-153. [PubMed](#)
8. Tramm R, Ilic D, Murphy K, Sheldrake J, Pellegrino V, Hodgson C. A qualitative exploration of acute care and psychological distress experiences of ECMO survivors. *Heart Lung.* 2016;45(3):220-226. [PubMed](#)
9. Harris-Fox S. The experience of being an 'extracorporeal membrane oxygenation' relative within the CESAR trial. *Nurs Crit Care.* 2012;17(1):9-18. [PubMed](#)
10. Primary Mixed-Method Studies Savas H, Ozdemir Koken Z, Senol Celik S. Experiences of adult extracorporeal membrane oxygenation patients following discharge: a mixed methods study. *Heart Lung.* 2020;49(5):592-598. [PubMed](#)

Appendix 1: References of Potential Interest

Additional References

11. Meltzer EC, Ivascu NS, Stark M, et al. A survey of physicians' attitudes toward decision-making authority for initiating and withdrawing VA-ECMO: results and ethical implications for shared decision making. *J Clin Ethics*. 2016;27(4):281-289. [PubMed](#)