MAR 27, 2023

OPEN ACCESS

DOI:
dx.doi.org/10.17504/protocols.io.x54v9dbqpg3e/v1

Protocol Citation: Patrick Ristau, Johanna Ristau, Andreas Wagenplast, Marcel Zill, Philipp Dahlmann, Stefan Dietsche 2023. How Paramedics Experience the Decision to Continue or Terminate Out-of-Hospital Resuscitation: A Scoping Review Protocol. **protocols.io** https://dx.doi.org/10.17504/protocols.io.x54v9dbqpg3e/v1

Protocol status: Working
We use this protocol for conducting a scoping review.

Created: Mar 26, 2023

Last Modified: Mar 27, 2023

PROTOCOL integer ID:
79446

How Paramedics Experience the Decision to Continue or Terminate Out-of-Hospital Resuscitation: A Scoping Review Protocol

Patrick Ristau[1,2], Johanna Ristau[3], Andreas Wagenplast[2], Marcel Zill[2], Philipp Dahlmann[4], Stefan Dietsche[1]

[1]Jade Hochschule, Campus Oldenburg, Department of Civil Engineering, Geoinformation and Health Technology, Ofener Str. 16/19, 26121 Oldenburg, Germany;
[2]University Hospital Schleswig-Holstein, Institute for Emergency Medicine, Arnold-Heller-Str. 3, Building 808, 24105 Kiel, Germany;
[3]University Hospital Schleswig-Holstein, Campus Lübeck, Ratzeburger Allee 160, 23562 Lübeck, Germany;
[4]Technische Hochschule Deggendorf, Dieter-Görlitz-Platz 2, 94469 Deggendorf, Germany

Patrick Ristau
Jade Hochschule, Campus Oldenburg, Department of Civil Engin...

Keywords: Out-of-Hospital Cardiac Arrest, Resuscitation, Paramedic, Termination of Resuscitation, Experience, Moral Distress, Decision-Making

ABSTRACT

Background

Out-of-hospital cardiac arrest (OHCA) is a frequent emergency requiring a rapid therapy start to avert the patient's death. Nevertheless, during resuscitation, it becomes necessary to reassess the previous procedures and to decide on continuing or terminating the therapeutic attempts. It is unclear how paramedics experience these decisions, especially as ethical conflicts in this context may lead to moral distress.

Objective

This scoping review aims to summarise the present knowledge of paramedics' experiences regarding the decision to continue or terminate out-of-hospital resuscitation in the field.

Design/Methods

We will conduct a scoping review and apply the JBI approach to search for evidence within ten databases (PubMed via MEDLINE, CINAHL, Cochrane Library, CAMbase, CareLit, CC Med, Scopus, PsycARTICLES, PsycINFO, and Web of Science). Thereby, we will follow the PRISMA guidelines for scoping reviews. We will include suitable literature in English and German language. There won't be any limitations regarding the methods of the studies, their publication date, or the inclusion of grey literature.

Discussion

Our study will be the first to map the available literature on this topic comprehensively. Conducting a scoping review is ideally suited for this purpose. The results may help to develop interventions to prevent moral distress or injuries.

Registration

Open Science Framework (https://doi.org/10.17605/OSF.IO/74D3Z)

Background

1 Out-of-hospital cardiac arrest (OHCA) is a common, acute life-threatening emergency: An average incidence of 56 cases per 100,000 inhabitants per year is reported for Europe (Gräsner et al., 2020); worldwide, the incidence ranges from 30 to 100 per 100,000 inhabitants per year depending on population and health system (Nishiyama et al., 2023).

However, a potentially life-saving therapy (cardio-pulmonary resuscitation (CPR)) is only possible in the first few minutes after the onset of circulatory arrest. Irreparable damage to the brain due to hypoxia occurs within minutes, leading to death within a short period of time (Sandroni et al., 2021).

In most of the world's developed countries, paramedic systems are established, in which mainly non-physician emergency medical personnel (EMP) care for emergency patients. Within these systems, patients are treated, and decisions are made based on, for example, the EMPs' level of training, standard operating procedures, or consultation with a physician. In contrast, in Germany, patients with OHCA are cared for jointly by a physician-led team of medical and non-medical emergency personnel — a rare feature in the international context.

During resuscitation, a re-evaluation of the previous therapy attempts, the patient's condition, and the general conditions of the OHCA is performed regularly (Mentzelopoulos et al., 2021; Soar et al., 2021). In many cases, a decision must be made during treatment if and for how long the resuscitation should be continued.

In many paramedic systems, paramedics have the authority to make decisions for or against the continuation of resuscitation following legal restrictions (Feder et al., 2006; Grudzen et al., 2009; Grudzen et al., 2010; Mengual et al., 2007; Morrison et al., 2007; Sabatino, 1999). The situation in Germany differs: Resuscitation must be started by EMP in case of doubt but may only be terminated by physicians. However, resuscitation does not have to be started if there are certain signs of death.

The tension between the obligation to help, that is: to perform CPR on the one hand, and on the other hand, the individual and, in many cases, the possibly conflicting will of the patient (e.g. recorded in a do not attempt resuscitation (DNAR) order), in which EMPs find themselves when performing CPR on terminally ill people, for example, has been described comprehensively (Guru et al., 1999; Nordby & Nøhr, 2012; Torabi et al., 2018; Wiese et al., 2011). In this context, it should be emphasised that instructions and strategies for end-of-life decisions in Germany are directed exclusively at physicians (Wiese et al., 2011; Wurmb & Brederlau, 2016).

Qualitative studies suggest that EMPs address this ethical dilemma by respecting the patient's wishes as much as possible while adhering to the applicable regulations and incorporating their values and professional identity (Bruun et al., 2022; Torabi et al., 2018). The decision-making process for or against the continuation of resuscitation represents - independent of medical factors - a complex process in a field of tension of mutually influencing factors (Brandling et al., 2017; Milling et al., 2022).

Paramedics consider the option of not attempting or discontinuing resuscitation to be of great importance for their professional empowerment (Counts et al., 2021; Grudzen et al., 2009; Mengual et al., 2007). Professional empowerment and agency in ethically challenging situations are of particular importance because feelings of powerlessness regarding treatment decisions, a demanding medical work environment, lack of authority and high levels of responsibility can be a source of moral distress (Hefferman & Heilig, 1999; Lentz et al., 2021; Morley et al., 2019).

Previous studies indicate that a lack of empowerment in resuscitation care may have severe psychological effects. For example, the study by Tanabe et al. (2022) shows high stress levels for more than 30% of Japanese paramedics after medico-legally enforced care of patients with

DNAR orders (Tanabe et al., 2022). These findings are not surprising, as medical staff responds to moral distress with various emotions (Lentz et al., 2021). These include, for example, anger, loneliness, depression, guilt, anxiety, feelings of powerlessness, and emotional withdrawal (Huffman & Rittenmeyer, 2012). These reactions can lead to physical symptoms over time.

Continued exposure to moral distress or serious events can potentially manifest in moral distress or even moral injuries (Čartolovni et al., 2021; Murray, 2019). To escape the suffering triggered by moral injuries, sufferers frequently leave their jobs or commit suicide (Smith-MacDonald et al., 2021). This scoping review aims to map the available evidence on paramedics' experience of the decision to continue or terminate resuscitation in out-of-hospital cardiac arrests.
For the reasons mentioned above, a public health issue could arise from the emergency medical personnel's experience of decisions for or against the termination of resuscitation.

So far, the current knowledge on this topic has not been comprehensively examined. Thus, we conducted a preliminary search of PubMed via MEDLINE on 8 March 2023. We couldn't identify any recent or underway systematic reviews or scoping reviews on this topic.

To close this research gap, we approach the research question by first operationalising the search terms with the PCC framework presented in Table 1.

Table 1: Population, Concept, and Context (PCC) framework for identification of main concepts.

	A	B
	PCC element	**Definition**
	Population	Non-physician emergency medical personnel who work in emergency medical services after regulated training. This includes paramedics and emergency medical technicians or the related country-specific professions.
	Concept	Experiencing decisions to continue or terminate out-of-hospital resuscitation. Decisions include those made independently or based on standing orders or protocols; after consulting a decision-maker; by attending physicians, or by the team leader.
	Context	Out-of-hospital decision-making.

From the PCC framework, we derive the research question as follows:

How do non-physician emergency medical personnel experience the decision to continue or terminate out-of-hospital resuscitation in the field?

Design/Methods

2 Design

Our study will be a scoping review according to the JBI methodology (Peters et al., 2020), described in detail below. This protocol follows the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement (Moher et al., 2015). It was

registered in advance with the Open Science Framework (Ristau et al., 2023).

Scoping reviews intend, among other purposes, to map a specific research topic's key concepts and identify and analyse knowledge gaps (Arksey & O'Malley, 2005; Peters et al., 2020). Their methodological strength derives from their ability to illustrate the breadth of knowledge.

3 Methods

Peters et al. (2020) provide a 9-step approach for conducting scoping reviews (Figure 1). Stages 1 to 3 must be pre-determined and specified within this protocol.

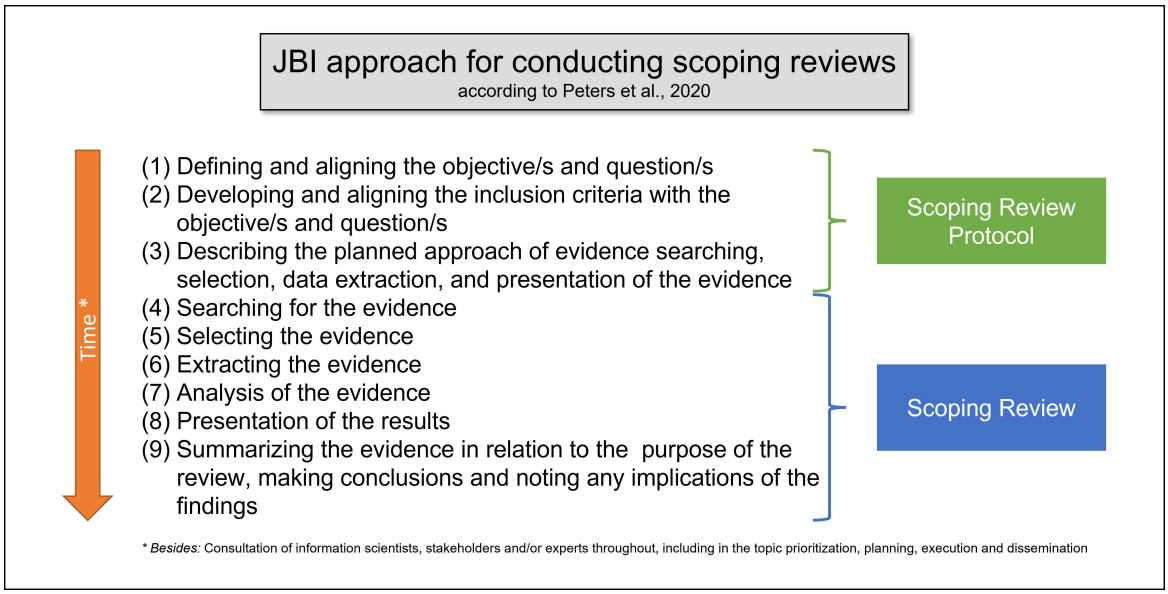

Figure 1: JBI approach for conducting scoping reviews according to Peters et al., 2020. Own illustration.

3.1 Eligibility Criteria

The inclusion and exclusion criteria result from the PCC framework and can be found in Table 2. In our review, we will not restrict the study design and the type of sources to cover the phenomenon of interest as broadly and comprehensively as possible.

Table 2: In- and exclusion criteria.

	A	B	C
	Domain	**Inclusion criteria**	**Exclusion criteria**
	Population	Non-physician Emergency Medical Personnel (EMP) working in Emergency Medical Service (EMS) after regulated training	Physician EMP, EMP without corresponding qualification

	A	B	C
	Phenomenon of interest	Report on experiences regarding decisions to continue or terminate out-of-hospital resuscitation outside the hospital	n/a
	Study design	*No limitations*	
	Type of source	All kinds of scientific and grey literature	n/a
	Language	English, German	n/a
	Timeframe	*No limitations*	

3.2 Information Sources

We will search the following databases for evidence:

- PubMed via MEDLINE
- CINAHL
- Cochrane Library
- CAMbase
- CareLit
- CC Med
- Scopus
- PsycARTICLES
- PsycINFO
- Web of Science

In addition, the bibliographies of the references included during the process will be searched for other potential matches by performing forward and backward citation tracking.

3.3 Search Strategy

As a first step, the PubMed, CINAHL, and Cochrane Library databases will be searched. Titles, abstracts, and index terms of the sources retrieved will be analysed regarding possible search terms. Professional advice will be sought from a linguist.

3.4 Data Management

All citations will be stored in the online database Rayyan (Rayyan Systems, Inc.) for further processing.

The full texts to be screened afterwards will be requested via our libraries or interlibrary loan service. If this is not possible, we will contact the authors and ask them to provide the full

texts. If this approach fails and access to the full text is impossible, the corresponding citation will not be considered for this study.

We will use Citavi (Swiss Academic Software) and Excel (Microsoft Corporation) in their current versions to evaluate and extract full texts.

3.5 Selection Process

One quality feature of systematic reviews is the screening or selection of evidence by several people independently of each other (Peters et al., 2020). For this purpose, the selection process will be conducted by three people, both in the title/abstract screening and in the full-text review.

First, 25 random titles/abstracts will be screened by all three people involved in the selection process using the eligibility criteria and definitions. Subsequently, the reviewers will discuss any discrepancies and will make modifications to the eligibility criteria and definitions as appropriate. If a definite decision cannot be made, the supervisors will be asked for a final decision. The review process will not start until the review team has reached a match of at least 75%.

Subsequently, two persons will screen all titles/abstracts independently. Then the results will be compiled. The third person will finally decide on inclusion or exclusion in case of disagreement between the first two. Chapter 2.12 study team describes in detail which person will take on which task at each stage.

3.6 Data Collection and Extraction Process

A spreadsheet will support the collection of data from the included full texts. Two reviewers will record the following items independently in Citavi and will then be merged into a common spreadsheet:

1. Author(s)
2. Year of publication
3. Origin/country of origin (where the source was published or conducted)
4. Aims/purpose
5. Population and sample size within the source of evidence
6. Methodology/methods
7. Context of the study/paper
8. Key findings that relate to the scoping review question

3.7 Data Items

Table 3 shows the preliminary search terms derived from the PCC framework.

Table 3: Preliminary search terms derived from the PCC framework.

	A	B
	PCC element	**Search term**
	Population	(paramedic OR EMS OR EMT OR "emergency medical technician" OR Notfallsanitäter OR Rettungssanitäter OR Rettungsassistent OR Rettungsfachpersonal)
	Concept	(CPR OR resuscitation OR OHCA OR "cardiac arrest" OR Reanimation OR Wiederbelebung) AND (experience OR view OR perspective OR Erleben OR erfahren OR Erfahrung OR wahrnehmen OR Wahrnehmung) AND (decision OR decision-making OR termination OR ToR OR DNAR OR Entscheidungsfindung OR Entscheidung OR Abbruch)
	Context	(out-of-hospital OR prehospital OR OHCA OR field OR außerklinisch OR präklinisch)

A preliminary search term for use in PubMed is derived as follows:

((population OR EMS OR EMT OR "emergency medical technician" OR Notfallsanitäter OR Rettungssanitäter OR Rettungsassistent OR Rettungsfachpersonal) AND ((CPR OR resuscitation OR OHCA OR "cardiac arrest" OR Reanimation OR Wiederbelebung) AND (experience OR view OR perspective OR Erleben OR erfahren OR Erfahrung OR wahrnehmen OR Wahrnehmung) AND (decision OR decision-making OR termination OR ToR OR DNAR OR Entscheidungsfindung OR Entscheidung OR Abbruch)) AND (out-of-hospital OR prehospital OR OHCA OR field OR außerklinisch OR präklinisch))

The search terms for the other databases will be adapted according to their logic and functionality.

3.8 Data Analysis

The results obtained during the data collection process will be marked in Citavi, extracted in an Excel spreadsheet, and synthesised along core concepts. We will also analyse whether the results indicate any differences regarding

1. the autonomy of paramedics' professional practice,
2. the duration of their training or the scope of professional training,
3. and the competencies of paramedics.

Subsequently, the core concepts and results will be summarised narratively and contrasted comparatively. If appropriate, these will be summarised graphically.

3.9 Data Synthesis and Presentation

A PRISMA flowchart following Page et al. (2021) will report on the different stages of the review process and on the references that will have been included and excluded in the review

process. The included articles will be presented in a table. The following contents will be listed in this table: (1) author(s), (2) year of publication, (3) origin/country of origin, (4) aims/purpose, (5) population and sample, (6) methodology/methods, (7) context of the study/paper.

Subsequently, the core concepts and results will be summarised narratively and contrasted comparatively. If appropriate, these will be summarised graphically.

3.10 Dissemination of Results

We expect to submit the results in manuscript form to a peer-reviewed journal by the end of 2023. The presentation will consider the PRISMA Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). Furthermore, the results will be presented at a congress.

3.11 Study Team

PR is the principal investigator. He is academically supervised by PD and SD, which are available for consultation in case of queries and methodological questions. JR is a linguist and contributes her expertise to the selection of search terms and the definition of search terms. AW and MZ will alternately conduct a second screen of the titles/abstracts. The person not involved in the screening will decide on inclusion or exclusion in case of discrepancies between the first and the second screener. JR, AW, or MZ will perform as the second reviewer in the data collection stage. All authors have expertise in evidence synthesis and knowledge of emergency medical services. Each person will contribute their expertise to the manuscript preparation.

Discussion

4 Within this protocol, we present our planned scoping review, which will summarise the present knowledge of paramedics' experiences regarding the decision to continue or terminate out-of-hospital resuscitation in the field.

A possible limitation of our approach is the restriction to chosen languages, whereby the largest part of the available literature will be covered with English. Furthermore, the search for German-language studies will also address the country-specific conditions described above.

By publishing a scoping review protocol in advance, we increase transparency in describing study methods and enhance the value of our future results. This also enables peer reviewers and other researchers to comment critically on the approach before its application. We will conduct our study as described here but ensure to consider any proposed methodological refinement regarding the objective and purpose of the review in an appropriate manner.

The dissemination of our findings on paramedics' experiences on the decision to continue or

terminate out-of-hospital resuscitation in the field through a scientific journal and at a congress may help to increase awareness and empathy regarding possible moral distress or even moral injuries. In the future, this awareness could possibly be used to create prevention opportunities, for example.

Furthermore, identifying gaps in the existing knowledge may constitute a foundation for methodological ideas and theoretical approaches toward future research. Our group of authors is currently preparing a qualitative study on the experience of decisions for or against the continuation of resuscitation by paramedics working in Germany.

List of Abbreviations

5

CPR - Cardio-Pulmonary Resuscitation
DNAR - Do Not Attempt Resuscitation
EMP - Emergency Medical Personnel
EMS - Emergency Medical System
EMT - Emergency Medical Technician
JBI - Joanna Briggs Institute
OHCA - Out-of-Hospital Cardiac Arrest
PCC - Population Concept Context
PRISMA - Preferred Reporting Items for Systematic Review and Meta-Analysis
PRISMA-P - Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols
PRISMA-ScR - PRISMA Extension for Scoping Reviews
ToR - Termination of Resuscitation

Statements and Declarations

6

Authors' contribution

This project is part of the first author's master thesis in public health. PR conducted the study conception and design, drafted the manuscript, and revised content based on feedback. PD and SD supervised the study conception and design. PD, SD, JR, AW, and MZ provided critical revisions of drafts. All authors approved the final version of the manuscript. PR is responsible for the integrity of this work as a whole.

7

Competing Interests

The authors declare no conflicts of interest.

8

Funding

No funding or third-party money was spent on this project.

9 Ethical Approval

According to German law, an ethical clearing is not required, as this study is a literature work.

10 Registration

Open Science Framework (https://doi.org/10.17605/OSF.IO/74D3Z)

This Scoping Review Protocol was registered on 13 March 2023 with the OSF Registries (Ristau et al., 2023).

ORCID Id

11 Patrick Ristau 0000-0001-9847-4199
Johanna Ristau 0000-0002-7722-3312
Andreas Wagenplast 0000-0002-5418-0831
Marcel Zill 0000-0003-4151-7842
Philipp Dahlmann 0000-0002-8648-3810
Stefan Dietsche 0009-0003-5982-8144

References

12 Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Brandling, J., Kirby, K., Black, S., Voss, S., & Benger, J. (2017). Emergency medical service provider decision-making in out of hospital cardiac arrest: An exploratory study. *BMC Emergency Medicine, 17*(1), 24. https://doi.org/10.1186/s12873-017-0136-3

Bruun, H., Milling, L., Mikkelsen, S., & Huniche, L. (2022). Ethical challenges experienced by prehospital emergency personnel: A practice-based model of analysis. *BMC Medical Ethics, 23*(1), 80. https://doi.org/10.1186/s12910-022-00821-9

Čartolovni, A., Stolt, M., Scott, P. A., & Suhonen, R. (2021). Moral injury in healthcare professionals: A scoping review and discussion. *Nursing Ethics, 28*(5), 590–602.

https://doi.org/10.1177/0969733020966776

Counts, C. R., Blackwood, J., Winchell, R., Drucker, C., Jennerich, A. L., Feder, S., Pompeo, K., Waldron, J., Sayre, M. R., Kudenchuk, P. J., & Rea, T. (2021). Emergency Medical Services and Do Not Attempt Resuscitation directives among patients with out-of-hospital cardiac arrest. *Resuscitation, 158*, 73–78. https://doi.org/10.1016/j.resuscitation.2020.11.015

Feder, S., Matheny, R. L., Loveless, R. S., & Rea, T. D. (2006). Withholding resuscitation: A new approach to prehospital end-of-life decisions. *Annals of Internal Medicine, 144*(9), 634–640. https://doi.org/10.7326/0003-4819-144-9-200605020-00006

Gräsner, J.-T., Wnent, J., Herlitz, J., Perkins, G. D., Lefering, R., Tjelmeland, I., Koster, R. W., Masterson, S., Rossell-Ortiz, F., Maurer, H., Böttiger, B. W., Moertl, M., Mols, P., Alihodžić, H., Hadžibegović, I., Ioannides, M., Truhlář, A., Wissenberg, M., Salo, A., . . . Bossaert, L. (2020). Survival after out-of-hospital cardiac arrest in Europe - Results of the EuReCa TWO study. *Resuscitation, 148*, 218–226. https://doi.org/10.1016/j.resuscitation.2019.12.042

Grudzen, C. R., Hoffman, J. R., Koenig, W. J., Boscardin, J., Lorenz, K. A., & Asch, S. M. (2010). The LA story: What happened after a new policy allowing paramedics to forgo resuscitation attempts in prehospital cardiac arrest. *Resuscitation, 81*(6), 685–690. https://doi.org/10.1016/j.resuscitation.2010.02.011

Grudzen, C. R., Timmermans, S., Koenig, W. J., Torres, J. M., Hoffman, J. R., Lorenz, K. A., & Asch, S. M. (2009). Paramedic and emergency medical technicians views on opportunities and challenges when forgoing and halting resuscitation in the field. *Academic Emergency Medicine : Official Journal of the Society for Academic Emergency Medicine, 16*(6), 532–538. https://doi.org/10.1111/j.1553-2712.2009.00427.x

Guru, V., Verbeek, P. R., & Morrison, L. J. (1999). Response of paramedics to terminally ill patients with cardiac arrest: An ethical dilemma. *CMAJ : Canadian Medical Association Journal = Journal De L'association Medicale Canadienne, 161*(10), 1251–1254.

Hefferman, P., & Heilig, S. (1999). Giving "moral distress" a voice: Ethical concerns among neonatal intensive care unit personnel. *Cambridge Quarterly of Healthcare Ethics : CQ : The International Journal of Healthcare Ethics Committees, 8*(2), 173–178. https://doi.org/10.1017/s0963180199802060

Huffman, D. M., & Rittenmeyer, L. (2012). How professional nurses working in hospital environments experience moral distress: A systematic review. *Critical Care Nursing Clinics of North America, 24*(1), 91–100. https://doi.org/10.1016/j.ccell.2012.01.004

Lentz, L. M., Smith-MacDonald, L., Malloy, D., Carleton, R. N., & Brémault-Phillips, S. (2021). Compromised Conscience: A Scoping Review of Moral Injury Among Firefighters, Paramedics, and Police Officers. *Frontiers in Psychology, 12*, 639781.

https://doi.org/10.3389/fpsyg.2021.639781

Mengual, R. P., Feldman, M. J., & Jones, G. R. (2007). Implementation of a novel prehospital advance directive protocol in southeastern Ontario. *CJEM, 9*(4), 250–259. https://doi.org/10.1017/s148180350001513x

Mentzelopoulos, S. D., Couper, K., van Voorde, P. de, Druwé, P., Blom, M., Perkins, G. D., Lulic, I., Djakow, J., Raffay, V., Lilja, G., & Bossaert, L. (2021). European Resuscitation Council Guidelines 2021: Ethics of resuscitation and end of life decisions. *Resuscitation, 161*, 408–432. https://doi.org/10.1016/j.resuscitation.2021.02.017

Milling, L., Kjær, J., Binderup, L. G., Muckadell, C. S. de, Havshøj, U., Christensen, H. C., Christensen, E. F., Lassen, A. T., Mikkelsen, S., & Nielsen, D. (2022). Non-medical factors in prehospital resuscitation decision-making: A mixed-methods systematic review. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine, 30*(1), 24. https://doi.org/10.1186/s13049-022-01004-6

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews, 4*(1), 1. https://doi.org/10.1186/2046-4053-4-1

Morley, G., Ives, J., Bradbury-Jones, C., & Irvine, F. (2019). What is 'moral distress'? A narrative synthesis of the literature. *Nursing Ethics, 26*(3), 646–662. https://doi.org/10.1177/0969733017724354

Morrison, L. J., Verbeek, P. R., Vermeulen, M. J., Kiss, A., Allan, K. S., Nesbitt, L., & Stiell, I. (2007). Derivation and evaluation of a termination of resuscitation clinical prediction rule for advanced life support providers. *Resuscitation, 74*(2), 266–275. https://doi.org/10.1016/j.resuscitation.2007.01.009

Murray, E. (2019). Moral injury and paramedic practice. *Journal of Paramedic Practice, 11*(10), 424–425. https://doi.org/10.12968/jpar.2019.11.10.424

Nishiyama, C., Kiguchi, T., Okubo, M., Alihodžić, H., Al-Araji, R., Baldi, E., Beganton, F., Booth, S., Bray, J., Christensen, E., Cresta, R., Finn, J., Grasner, J.-T., Jouven, X., Kern, K. B., Maconochie, I., Masterson, S., McNally, B., Nolan, J. P., . . . Iwami, T. (2023). Three-year trends in out-of-hospital cardiac arrest across the world: Second report from the International Liaison Committee on Resuscitation (ILCOR). *Resuscitation*, 109757. https://doi.org/10.1016/j.resuscitation.2023.109757

Nordby, H., & Nøhr, Ø. (2012). The ethics of resuscitation: How do paramedics experience ethical dilemmas when faced with cancer patients with cardiac arrest? *Prehospital and Disaster Medicine, 27*(1), 64–70. https://doi.org/10.1017/S1049023X1200026X

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ (Clinical Research Ed.), 372*, n71. https://doi.org/10.1136/bmj.n71

Peters, M. D. J., Godfrey, C., McInerney, P., Munn, Z., Tricco, A. C., & Khalil, H. (2020). Chapter 11: Scoping reviews. In E. Aromataris & Z. Munn (Eds.), *JBI Manual for Evidence Synthesis*. JBI. https://doi.org/10.46658/JBIMES-20-12

Ristau, P., Ristau, J., Wagenplast, A., Zill, M., Dahlmann, P., & Dietsche, S. (2023, March 13). *How Paramedics Experience the Decision to Continue or Terminate Out-of-Hospital Resuscitation: A Soping Review Protocol*. OSF Preregistration. https://doi.org/10.17605/OSF.IO/74D3Z

Sabatino, C. P. (1999). Survey of state EMS-DNR laws and protocols. *The Journal of Law, Medicine & Ethics : A Journal of the American Society of Law, Medicine & Ethics, 27*(4), 297-315, 294. https://doi.org/10.1111/j.1748-720x.1999.tb01465.x

Sandroni, C., Cronberg, T., & Sekhon, M. (2021). Brain injury after cardiac arrest: Pathophysiology, treatment, and prognosis. *Intensive Care Medicine, 47*(12), 1393–1414. https://doi.org/10.1007/s00134-021-06548-2

Smith-MacDonald, L., Lentz, L., Malloy, D., Brémault-Phillips, S., & Carleton, R. N. (2021). Meat in a Seat: A Grounded Theory Study Exploring Moral Injury in Canadian Public Safety Communicators, Firefighters, and Paramedics. *International Journal of Environmental Research and Public Health, 18*(22). https://doi.org/10.3390/ijerph182212145

Soar, J., Böttiger, B. W., Carli, P., Couper, K., Deakin, C. D., Djärv, T., Lott, C., Olasveengen, T., Paal, P., Pellis, T., Perkins, G. D., Sandroni, C., & Nolan, J. P. (2021). European Resuscitation Council Guidelines 2021: Adult advanced life support. *Resuscitation, 161*, 115–151. https://doi.org/10.1016/j.resuscitation.2021.02.010

Tanabe, R., Hongo, T., Mandai, Y., Inaba, M., Yorifuji, T., Nakao, A., Elmer, J., & Naito, H. (2022). Emotional work stress reactions of emergency medical technicians involved in transporting out-of-hospital cardiac arrest patients with "do not attempt resuscitation" orders. *Resuscitation, 173*, 61–68. https://doi.org/10.1016/j.resuscitation.2022.01.028

Torabi, M., Borhani, F., Abbaszadeh, A., & Atashzadeh-Shoorideh, F. (2018). Experiences of pre-hospital emergency medical personnel in ethical decision-making: A qualitative study. *BMC Medical Ethics, 19*(1), 95. https://doi.org/10.1186/s12910-018-0334-x

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., . . . Straus, S. E. (2018). Prisma Extension for Scoping

Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine, 169*(7), 467–473. https://doi.org/10.7326/M18-0850

Wiese, C. H. R., Vagts, D. A., Kampa, U., Pfeiffer, G., Grom, I.-U., Gerth, M. A., Graf, B. M., & Zausig, Y. A. (2011). Palliativpatienten und Patienten am Lebensende in Notfallsituationen. Empfehlungen zur ambulanten Versorgungsoptimierung [Palliative care and end-of-life patients in emergency situations. Recommendations on optimisation of out-patient care]. *Der Anaesthesist, 60*(2), 161–171. https://doi.org/10.1007/s00101-010-1831-6

Wurmb, T., & Brederlau, J. (2016). Patientenwille und Akutmedizin [Patients' declared intentions and emergency medicine]. *Medizinische Klinik, Intensivmedizin und Notfallmedizin, 111*(2), 113–117. https://doi.org/10.1007/s00063-015-0086-z