PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Ethical issues in termination of resuscitation decision-making: An interview study with paramedics and relatives of out-of-hospital cardiac arrest non-survivors
AUTHORS	Eli, Karin; Huxley, Caroline; Gardiner, Galina; Perkins, Gavin; Smyth, Michael; Griffiths, Frances; Slowther, Anne-Marie

VERSION 1 - REVIEW

REVIEWER NAME	Naito, Hiromichi
REVIEWER AFFILIATION	Okayama University Hospital, Advanced Emergency and Critical Care Medical Center
REVIEWER CONFLICT OF INTEREST	I have no competing interests.
DATE REVIEW RETURNED	18-Feb-2024

GENERAL COMMENTS	Authors conducted interviews with paramedics and relatives of OHCA patients. Paramedics' ethical concerns in decision-making processes to terminate resuscitation were thematically analyzed. The study is highly narrative and lacks objectivity. There is a need to extract and analyze each factor obtained in the study and quantify them. OHCA patient information is not provided, making it difficult to evaluate whether resuscitation efforts are futile. Consider extracting patient information by "variables." The number of cases is small, and substantial statistical analysis has not been performed. The study outcome and definition are not clearly stated. While interviews are analyzed thematically, they lack objectivity.

REVIEWER NAME	Milling, Louise
REVIEWER AFFILIATION	University of Southern Denmark
REVIEWER CONFLICT OF INTEREST	I declare that I have no competing interests
DATE REVIEW RETURNED	26-Feb-2024

GENERAL COMMENTS	Overall: Thank you for the opportunity to review this well-written and interesting manuscript. The manuscript contributes a new and important angle to the area of complex ethical decision-making in out-of-hospital cardiac arrest. I have a few clarifying questions, but overall, find the method and

	findings well-founded. Specific Methods p. 3, l. 43-44: You state that all interviews were conducted by telephone or Microsoft Teams. Could this have impacted your data quality compared to face-to-face interviews? p. 3., l. 48-49: “Interviews ended with a series of vignettes, presenting fictional OHCA scenarios.” How were the vignettes derived? Did they cover specific ethical challenges? Please elaborate p. 3, l. 60: “PPI”: Please specify the abbreviation when first mentioned p. 4. l. 20-24: Please provide an example of the coding framework to increase the transparency of the analysis process Results p. 4, l. 41-42: Did the duration of the interviews differ between in-person and telephone interviews? What was the median length of the interviews? p. 7, l. 56: Please remove the # or provide the paramedic number Discussion and conclusions p. 11, l. 34-36: “Training around ethical reasoning and decision-making may help paramedics reduce their moral distress”. Would it be possible to train ethical reasoning and how? Is the ethical dilemma not different from OHCA to OHCA, hence the vague guidance and lack of concrete guidelines in this area? I recognise that the latter is a leading question and may be beyond the scope of this manuscript. In my opinion, suggestions for possible solutions and concrete interventions are needed when discussing improvements in the management of ethical challenges in OHCA. I would appreciate a (small) paragraph concerning possible interventions to address e.g. moral distress and ethical challenges in OHCA to heighten the discussion/conclusion.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Comments	Response
Authors conducted interviews with paramedics and relatives of OHCA patients. Paramedics’ ethical concerns in decision-making processes to terminate resuscitation were thematically analyzed. The study is highly narrative and lacks objectivity. There is a need to extract and analyze each factor obtained in the study and quantify them. OHCA patient information is not provided, making it difficult to evaluate whether	We are concerned that Reviewer 1 has misunderstood the purpose and qualitative methodology of the paper. We would like to clarify that, as a qualitative study, this research does not aim at objectivity and that quantification and/or statistical analysis of our findings would not be appropriate. In addition, as our focus was on paramedics’ experiences of ethical issues arising during resuscitation decision-making, rather than on the outcomes of resuscitation cases, collecting and reporting data on the patients was beyond the scope of this research.

resuscitation efforts are futile. Consider extracting patient information by "variables." The number of cases is small, and substantial statistical analysis has not been performed. The study outcome and definition are not clearly stated. While interviews are analyzed thematically, they lack objectivity.	To ensure that it is clear to readers from the very start of the paper that our study is qualitative, we have re-examined the paper and have added that the study was qualitative, in both the abstract (under 'design') and the methods (under 'recruitment and data collection').

Reviewer: 2

Comments	Response
Thank you for the opportunity to review this well-written and interesting manuscript. The manuscript contributes a new and important angle to the area of complex ethical decision-making in out-of-hospital cardiac arrest. I have a few clarifying questions, but overall, find the method and findings well-founded.	Thank you for this encouraging and constructive feedback, which has helped improve our manuscript.
p. 3, l. 43-44: You state that all interviews were conducted by telephone or Microsoft Teams. Could this have impacted your data quality compared to face-to-face interviews?	Thank you for highlighting this. We have now added the following statement: "Most interviews were conducted remotely: 27 paramedic interviews were conducted over Microsoft Teams and four by telephone; 13 relative interviews were conducted by telephone and one was conducted in person. While research in qualitative methods has found that in-person interviews may produce more detailed data than remote interviews, we are reassured that the data collected for this study are of high quality, given the metrics of interview length,

	researcher experiences of the interviews, and the richness of the resulting analysis. Moreover, as Krouwel et al. (2019) have found in a comparative analysis of in-person and video call interviews, although in-person interviews may produce more detailed data, both types of interview generate an equivalent breadth of codes" (p. 6, lines 154-162 in the manuscript with tracked changes). We have also added the following references: Johnson DR, Scheitle CP, Ecklund EH. Beyond the in-person interview? How interview quality varies across in-person, telephone, and Skype interviews. Social science computer review. 2021 Dec;39(6):1142-58. Krouwel M, Jolly K, Greenfield S. Comparing Skype (video calling) and in-person qualitative interview modes in a study of people with irritable bowel syndrome–an exploratory comparative analysis. BMC medical research methodology. 2019 Dec;19:1-9.
p. 3., l. 48-49: "Interviews ended with a series of vignettes, presenting fictional OHCA scenarios." How were the vignettes derived? Did they cover specific ethical challenges? Please elaborate	We now specify that: "The vignettes were developed by the study team, headed by MS, a senior paramedic, and were designed to encourage discussion on potentially key considerations in OHCA decision-making, including the patient's age, comorbidities, clinical presentation, the provision of bystander CPR, response to treatment, duration of resuscitation, and distance to hospital" (p. 4, lines 99-102 in the manuscript with tracked changes).
p. 3, l. 60: "PPI": Please specify the abbreviation when first mentioned	We have removed the reference to PPI in this sentence; however, we now specify 'patient and public involvement', when first mentioned (p. 5, line 138 in the manuscript with tracked changes).
p. 4. l. 20-24: Please provide an example of the coding framework to increase the transparency of the analysis process	We now provide the coding framework as supplementary material. Moreover, to further increase the transparency of the analysis

	process, we have added the following details to the methods section: “In the first stage, interviews from the wider study sample (including interviews with paramedics, relatives and emergency department staff) were assigned using a random sequence generator;(11) the analysis team included A-MS (a GP/medical ethicist), FG (a GP/medical sociologist), GG (a research psychologist), CH (a research psychologist), and KE (a medical anthropologist). Team members coded the interviews for explicit and implicit ethical issues. The lists of codes were compiled into a longlist, which was discussed in a team meeting. Following this discussion, a draft coding framework was developed by KE and reviewed by the team(12) and a decision was made to include only the paramedic and relative interviews in the analytic process. While parallels were observed between the paramedic and the emergency department staff interviews with regard to ethical issues such as caring for the patient's family and acting in the patient's best interests, because the emergency department staff interviews focused on decision-making after patients had been transported to hospital, we found they were less relevant to the research question at hand” (p. 5, lines 119-131 in the manuscript with tracked changes).
p. 4, l. 41-42: Did the duration of the interviews differ between in-person and telephone interviews? What was the median length of the interviews?	We now state the range and median length for both the paramedic and the relative interviews: “The paramedic interviews lasted between 28 and 96 minutes (median = 62 minutes); the relative interviews lasted between 28 and 72 minutes (median = 43 minutes)” (p. 6, lines 152-154 in the manuscript with tracked changes). The one in-person interview with a relative did not differ in length from the telephone interviews (46 min 34 sec).
p. 7, l. 56: Please remove the # or provide the paramedic number	We now state the paramedic number.

p. 11, l. 34-36: “Training around ethical reasoning and decision-making may help paramedics reduce their moral distress”. Would it be possible to train ethical reasoning and how? Is the ethical dilemma not different from OHCA to OHCA, hence the vague guidance and lack of concrete guidelines in this area? I recognise that the latter is a leading question and may be beyond the scope of this manuscript.	We agree that training in ethical reasoning may be challenging. What can be achieved is training in recognition of ethical issues, awareness of potential biases and morally relevant considerations, and a framework to think through the ethically relevant factors in each situation. We referred to a framework for decision making in our discussion but have now revised the discussion to include a paragraph that explicitly considers possible interventions to improve ethical decision making and address moral distress. We have included the reference to an ethical framework in this section. “Paramedics must make ethically challenging and life changing decisions around termination of resuscitation. Guidance on negotiating these ethical challenges underpinned by specific consideration of ethical issues during training is needed to support paramedics in this aspect of their decision making. In the intensive care context, Griffiths et al. have suggested a decision-making framework that facilitates the weighing of burdens and benefits could reduce reliance on individual clinicians’ assumptions and increase transparency and equity.(20) A similar framework, taking into account the specific constraints of decision-making in OHCA, could be helpful to include in guidance and training for paramedics. There is also a need to recognise and support paramedics who experience moral distress arising from their experiences. Boulton et al have suggested that a personalised approach to supporting clinicians in intensive care who experience moral distress is needed, while noting the importance of a supportive organisational culture and the availability of designated experienced senior staff in the support process.(31) Explicit consideration of moral distress should be included in developing clinical support structures for paramedics” (pp. 12-13, lines 428-440 in the manuscript with tracked changes). We have also amended our conclusion to remove the reference to training for ethical reasoning. It now states:

	"A framework for ethical decision making in OHCA, alongside organisational support for decision making, may help paramedics reduce their moral distress and provide consistent and transparent decisions for patients and their families" (p. 13, lines 470-472 in the manuscript with tracked changes).
In my opinion, suggestions for possible solutions and concrete interventions are needed when discussing improvements in the management of ethical challenges in OHCA. I would appreciate a (small) paragraph concerning possible interventions to address e.g. moral distress and ethical challenges in OHCA to heighten the discussion/conclusion.	As noted in our response to the previous comment we have now added a paragraph to the discussion sketching out some approaches to support paramedics in making ethically challenging decisions in OHCA.