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Clinical paper

Impact of perceived inappropiate cardiopulmonary resuscitation on emergency clinicians' intention to leave the job: Results from a cross-sectional survey in 288 centres across 24 countries

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Abstract

Introduction: Cardiopulmonary resuscitation (CPR) in patients with a poor prognosis increases the risk of perception of inappropriate care leading to moral distress in clinicians. We evaluated whether perception of inappropriate CPR is associated with intention to leave the job among emergency clinicians.

Methods: A cross-sectional multi-centre survey was conducted in 24 countries. Factors associated with intention to leave the job were analysed by conditional logistic regression models. Results are expressed as odds ratios with 95% confidence intervals.

Results: Of 5099 surveyed emergency clinicians, 1836 (36.0%) were physicians, 1313 (25.7%) nurses, 1950 (38.2%) emergency medical technicians. Intention to leave the job was expressed by 1721 (33.8%) clinicians, 3403 (66.7%) often wondered about the appropriateness of a resuscitation attempt, 2955 (58.0%) reported moral distress caused by inappropriate CPR. After adjustment for other covariates, the risk of intention to leave the job was higher in clinicians often wondering about the appropriateness of a resuscitation attempt (1.43 [1.23−1.67]), experiencing associated moral distress (1.44 [1.24−1.66]) and who were between 30−44 years old (1.53 [1.21−1.92] compared to <30 years). The risk was lower when the clinician felt valued by the team (0.53 [0.42−0.66]), when the team leader acknowledged the efforts delivered by the team (0.61 [0.49−0.75]) and in teams that took time for debriefing (0.70 [0.60−0.80]).

Conclusion: Resuscitation attempts perceived as inappropriate by clinicians, and the accompanying moral distress, were associated with an increased likelihood of intention to leave the job. Interprofessional collaboration, teamwork, and regular interdisciplinary debriefing were associated with a lower risk of intention to leave the job.

ClinicalTrials.gov; No.: NCT02356029

Keywords: Emergency department, Emergency medical services, Futility, Inappropriate cardiopulmonary resuscitation, Moral distress, Out of hospital cardiac arrest

Introduction

The provision of cardiopulmonary resuscitation (CPR) to patients with severe comorbidities and frailty has greatly increased since its first introduction more than 50 years ago. Data from the Danish Cardiac Arrest Registry collected between 2001 and 2011 show a threefold increase in bystander CPR and of return of spontaneous circulation among patients 80 years or older, but at the same time a significant decline in 1-year survival.[1] The incidence of CPR attempts in nursing homes also increased over the past several decades; in Denmark the incidence quadrupled from 3.5% in 2002 to 16.5% in 2014 while in Japan the proportion of cardiac arrests treated in nursing homes increased from approximately 12% to almost 20% in a time span of approximately 5 years.[2,3] In the largest series reported thus far, none of the 2575 resuscitated nursing home residents had a good 1-year functional recovery.[4] Data from Japan and North America show that 13−20% of the resuscitated cardiac arrest patients are aged 73 years or older and have an unwitnessed cardiac arrest with a non-shockable rhythm, resulting in a favorable neurological outcome of 0.5% or even less.[5–7] All these data suggest that patients often undergo resuscitation attempts without taking into account the dismal prognosis of the patient.

Inappropriate resuscitation attempts, defined as CPR attempts that are disproportionate to the expected prognosis of the patient in terms of survival or quality of life, are not only detrimental to patients, but can also cause moral distress to emergency clinicians. According to the definition provided by Jameton, moral distress is a challenge that arises when one knows the right thing to do ethically or medically, but institutional and external constraints make it nearly impossible to pursue the right course of action.[8] Frequent exposure to similar patient care situations and/or a professional environment not acknowledging the distress may lead to deficient coping mechanisms and accumulation of moral distress. This may be associated with burn-out of the clinician and employee attrition, resulting in a decreased quality of care provided to current and future patients (Fig. 1).[9–13]

The purpose of this study was to determine whether frequent perception of inappropriateness of CPR and the presence of moral distress due to this perception are associated with intention to leave the job among clinicians working on prehospital and emergency department resuscitation teams. Secondary aims were to evaluate if the association differed according to the profession, age, and gender of the clinician.

Methods

Study design and participants

The REAPPROPRIATE study is an international multi-centre cross-sectional survey conducted in 24 countries (Austria, Belgium, Chile, Cyprus, Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, Israel, Japan, The Netherlands, Norway, Poland, Republic of Ireland, Romania, Serbia, Slovak Republic, Spain, Sweden, the United Kingdom, and the United States). The study

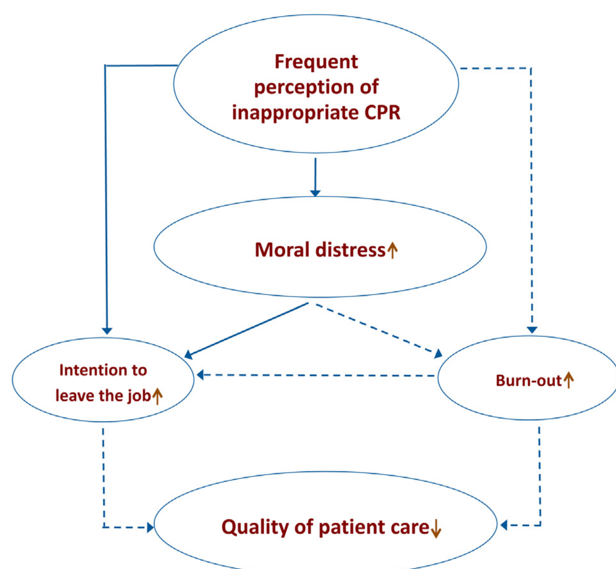

Fig. 1 – Theoretical framework.
The relationship between frequent perception of inappropriate CPR, moral distress and intention to leave the job was investigated in this research (solid lines); dashed lines connect relationships not measured in this study.
***CPR:* cardiopulmonary resuscitation.**

population consisted of clinicians, defined as healthcare professionals working as caregivers for patients who are directly involved in the treatment of cardiac arrest in the prehospital setting or the emergency department (Table 1). After creating a network of national coordinators with a lead position in national or international scientific organisations or conducting research related to emergency medicine, 168 emergency departments, 115 ambulance services, 2 resuscitation training centres, and 3 medical professional organisations were recruited (Table 1). More detailed information on the study protocol can be found in an earlier publication.[14]

Survey

The survey was modified based on a validated questionnaire used in the APPROPRICUS study and extended to the setting of emergency medicine.[15] A modified Delphi method was used to adjust the questionnaire which in its final version was translated into the language of each participating country using an adapted Brislin's method.[16] The national coordinators cooperated with the local investigators to ensure access to a secured study website. Data collection took place from March 2015 until November 2015.

Description of the survey

In addition to information about their demographic, professional background, and working environment, clinicians were asked if they

Table 1 – Participating countries, centres and clinicians.

Region N = 5	Country N = 24	Centres N = 288	Clinicians N = 5099	Physicians N = 1836 (36.0) n (%)	Nurses N = 1313 (25.7) n (%)	EMT N = 1950 (38.2) n (%)
Western Europe	Austria	6 ED/16 AS	313	77 (24.6)	27 (8.6)	209 (66.8)
N = 2161	Belgium	12 ED/19 AS	314	105 (33.4)	147 (46.8)	62 (19.7)
	France	15 ED/8 AS	277	145 (52.3)	98 (35.4)	34 (12.3)
	Germany	13 AS	237	86 (36.3)	1 (0.4)	150 (63.3)
	The Netherlands	5 ED/10 AS	387	53 (13.7)	130 (33.6)	204 (52.7)
	Republic of Ireland	7 ED/1 AS/3[a]	79	44 (55.7)	33 (41.8)	2 (2.5)
	United Kingdom	11 ED/4 AS	554	129 (23.3)	104 (18.8)	321 (57.9)
Central Europe	Czech Republic	4 ED/8 AS	360	122 (33.9)	66 (18.3)	172 (47.8)
N = 1108	Hungary	8 ED/3 AS	395	151 (38.2)	166 (42.0)	78 (19.7)
	Poland	4 ED/6 AS	133	47 (35.3)	25 (18.8)	61 (45.9)
	Romania	1 ED	59	48 (81.4)	10 (16.9)	1 (1.7)
	Serbia	1 AS	5	3 (60.0)	2 (40.0)	0 (0.0)
	Slovak Republic	5 AS	156	45 (28.8)	20 (12.8)	91 (58.3)
Southern Europe	Cyprus	2 ED	47	9 (19.1)	38 (80.9)	0 (0.0)
N = 461	Greece	5 ED/1[b]	290	173 (59.7)	106 (36.5)	11 (3.8)
	Spain	17 ED/6 AS	124	86 (69.4)	33 (26.6)	5 (4.0)
Northern Europe	Finland	3 ED/4 AS	151	13 (8.6)	42 (27.8)	96 (63.6)
N = 313	Iceland	3 ED/2 AS	84	15 (17.9)	36 (42.8)	33 (39.3)
	Norway	4 ED/3 AS	63	7 (11.1)	33 (52.4)	23 (36.5)
	Sweden	3 ED	15	12 (80.0)	3 (20.0)	0 (0.0)
Other	Chile	2 ED	41	23 (56.1)	10 (24.4)	8 (19.5)
N = 1056	Israel	5 ED/4 AS	386	39 (10.1)	33 (8.5)	314 (81.3)
	Japan	45 ED/1 AS/1[b]	459	304 (66.2)	106 (23.1)	49 (10.7)
	United States	6 ED/1 AS	170	100 (58.8)	44 (25.9)	26 (15.3)

47 nurse assistants and 74 ED technicians were included in the EMT group.
ED emergency department, *AS* ambulance service, *EMT* emergency medical technician (including paramedics).
[a] Medical professional organisations.
[b] Resuscitation training centre.

thought about leaving their current position, whether they often wondered about the appropriateness of a resuscitation attempt, and whether a resuscitation attempt they believed to be disproportionate to the expected prognosis of the patient in terms of survival or quality of life caused moral distress. If applicable, a 4-point rating scale ranging from “fully agree” to “fully disagree” was used. All survey items are listed in Supplementary data Appendix A.

Statistical analysis

To obtain a comprehensive overview of relevant factors associated with the intention to leave the job, and to account for variability due to clinician and patient case-mix across centres, adjusted within-centre odds ratios for intention to leave the job were estimated using conditional logistic regression. The final set of covariates in this model was selected as follows. A conditional logistic regression model was fitted to a selected set of survey items (see Supplementary data Appendix A). This full model was subjected to a backward stepwise elimination procedure. In each step the covariate with the largest P-value >0.10 was discarded, with the exception of a set of primary interest covariates (profession, age, and gender of the respondent, and dichotomized responses to the items “I often wonder about the appropriateness of a resuscitation attempt" and “A resuscitation attempt that I believe to be disproportionate causes moral distress to

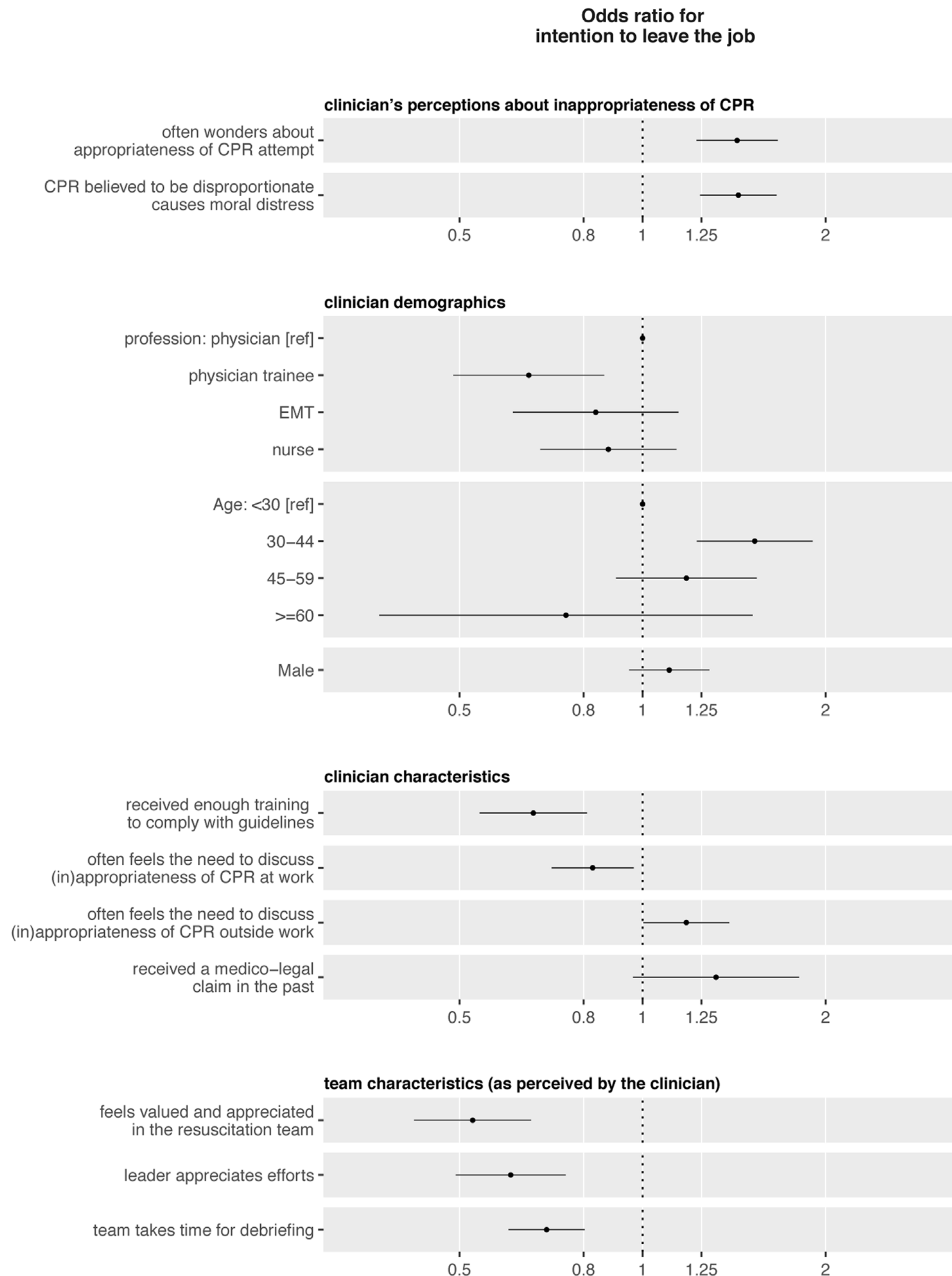

Fig. 2 – Point and 95% confidence interval estimate plots for adjusted odds ratios relating levels of each of the retained covariates with intention to job leave (logarithmic scale). Wherever applicable, odds ratios are expressed relative to the indicated baseline category.
***CPR*: cardiopulmonary resuscitation, *EMT*: emergency medical technician (including paramedics).**

me") that were forced in the model. After covariate selection, hypotheses were formulated related to specific interactions between covariates in the retained set (see Supplementary data Appendix B). Interaction terms corresponding with interactions not found to be significantly related to the outcome were omitted from the final model.

All analyses were performed in R 3.6.0 (R Foundation for Statistical Computing, Vienna, Austria).

Compliance with ethical standards

This study was conducted in accordance with the Declaration of Helsinki. The study was approved by the Institutional Review Board of all participating countries, except when informed consent was not required in a specific country. To guarantee data security, a HyperText Transfer Protocol Secure website https://reappropriate.eu was designed and signed by a trusted certificate authority, allowing encryption of all transferred data.

Results

Of the 5882 clinicians participating, 5099 (86.7%) completed all selected survey items. Physicians, nurses, and emergency medical technicians (including paramedics) accounted for 1836 (36.0%), 1313 (25.7%) and 1950 (38.2%) of surveyed clinicians, respectively (Table 1).

Of the 5099 clinicians, 1721 (33.8%) responded that they had thoughts about leaving their current job, 3403 (66.7%) stated that they often wondered about the appropriateness of a resuscitation attempt, and 2955 (58.0%) reported moral distress caused by a resuscitation attempt perceived to be disproportionate to the expected prognosis of the patient in terms of survival or quality of life.

Factors independently associated with the intention to leave the job (as estimated from the final conditional logistic model) are shown in Fig. 2. Corresponding numerical estimates and 95% confidence intervals can be found in Table 2.

After adjustment for centre-related effects and other covariates included in the model, a higher prevalence of intention to leave the job was identified among clinicians who reported often wondering about the appropriateness of a resuscitation attempt (adjusted OR = 1.43 [95% CI = 1.23–1.67]) and among clinicians who reported that a resuscitation attempt perceived to be disproportionate caused moral distress (adjusted OR = 1.44 [95% CI = 1.24–1.66]).

The prevalence of intention to leave the job was found to be associated with both profession and age of the clinician. Compared to physicians, the estimated relative odds of intention to leave the job was 0.65 [95% CI = 0.49–0.86] among physician trainees, 0.84 [95% CI = 0.61–1.15] among emergency medical technicians, and 0.88 [95% CI = 0.68–1.14] among nurses. Compared to clinicians aged less than 30, the estimated relative odds of intention to leave the job was 1.53 [95% CI = 1.21–1.92] among clinicians aged 30–44, 1.18 [95% CI = 0.89–1.56] among clinicians aged 45–59, and 0.75 [95% CI = 0.36–1.57] among clinicians aged ≥60. The intention to leave the job was not considerably different in male as compared to female clinicians (adjusted OR = 1.11 [95% CI = 0.95–1.29]).

Clinicians who reported receiving enough training to be able to comply with the current guidelines for resuscitation were found less likely to report intentions to leave the job (adjusted OR = 0.66 [95% CI = 0.54–0.81]), as were clinicians who reported often feeling the need to discuss the appropriateness of CPR at work (adjusted OR = 0.83 [95% CI = 0.71–0.97]). In contrast, clinicians who often felt the need to discuss the appropriateness of CPR outside of work settings were more likely to report intentions to leave the job (adjusted OR = 1.18 [95% CI = 1.00–1.39]).

Table 2 – Factors independently associated with the intention to leave the job.

		Odds ratio	95% confidence interval
Clinician's perceptions about inappropriateness of CPR			
Often wonders about appropriateness of CPR attempt		1.43	(1.23–1.67)
CPR believed to be disproportionate causes moral distress		1.44	(1.24–1.66)
Clinician demographics			
Profession:	Physician [ref]	1.00	
	Physician trainee	0.65	(0.49–0.86)
	EMT	0.84	(0.61–1.15)
	Nurse	0.88	(0.68–1.14)
Age:	<30 [ref]	1.00	
	30–44	1.53	(1.21–1.92)
	45–59	1.18	(0.89–1.56)
	≥60	0.75	(0.36–1.57)
	Unknown	2.17	(0.51–9.23)
Gender: male (vs. female)		1.11	(0.95–1.29)
Clinician characteristics			
Received enough training to comply with guidelines		0.66	(0.54–0.81)
Often feels the need to discuss (in)appropriateness of CPR at work		0.83	(0.71–0.97)
Often feels the need to discuss (in)appropriateness of CPR outside of work setting		1.18	(1.00–1.39)
Received a medico-legal claim in the past		1.32	(0.96–1.81)
Team characteristics (as perceived by the clinician)			
Feels valued and appreciated in the resuscitation team		0.53	(0.42–0.66)
Leader appreciates efforts		0.61	(0.49–0.75)
Team takes time for debriefing		0.70	(0.60–0.80)

CPR: cardiopulmonary resuscitation, EMT: emergency medical technician (including paramedics).

There was a reduced prevalence of intention to leave the job when the clinician felt valued by the team (adjusted OR = 0.53 [95% CI = 0.42 −0.66]), when the team leader acknowledged the efforts delivered by the team (adjusted OR = 0.61 [95% CI = 0.49−0.75]) and when the clinician was working in a team that took time for debriefing after a resuscitation attempt (adjusted OR = 0.70 [95% CI = 0.60−0.80]).

None of the interaction terms corresponding to formulated hypotheses related to specific interactions of interest (see Supplementary data Appendix B) were found to be significantly related to the outcome.

Discussion

In this large international multi-centre cross-sectional survey we found that 66.7% of clinicians working in prehospital and emergency department settings endorsed often questioning the appropriateness of a resuscitation attempt, and 58% reported moral distress in case of resuscitation attempts which they perceived as inappropriate. Moreover, we found that 33.8% of clinicians have thoughts about leaving their current job. The intention to leave the job was associated both with frequent perception of inappropriate CPR and with moral distress.

Previous studies in the United States found in 1995 and again in 2007 that 55% and 57% of surveyed emergency physicians, respectively, reported having attempted more than 10 resuscitations that they perceived as futile in the prior 3 years.[17,18] Similarly, another survey found that emergency medical technicians estimated 50% of their resuscitation attempts to have a very low likelihood of success.[19] In our survey comprising a larger number of clinicians covering all the relevant professional backgrounds related to emergency medicine and working in different healthcare systems, two-thirds of the surveyed clinicians often wondered about the appropriateness of a resuscitation attempt. This persistently high prevalence of perception of inappropriate CPR is no surprise, as the population being resuscitated has become one with increasingly poor prognostic characteristics over time.[1−4] Moreover, for many patients, resuscitation is not considered to be desirable if they are informed that the chance of a poor functional state afterwards is very high.[20]

The prevalence of intention to leave the job is slightly higher in our study than in previous data where approximately 24% of the emergency physicians who responded reported the intention to resign.[21] Another study from Shanghai reported a rate of 22.5% with intention to leave the job among emergency department nurses, and an online survey in Israel showed that less than one-third of trained paramedics were still active, with 50% leaving their profession after 3 years.[11,22]

In our study, clinicians between ages 30−44 years most frequently reported intentions to leave the job, while clinicians younger than 30 years and physicians in training were considerably less likely to report such intentions. One possible explanation for this difference is that young clinicians may focus primarily on the technical aspects of CPR with less consideration on longer-term outcomes, where moral distress occurs at a later stage of their careers, after multiple encounters.[15] While some studies indeed report higher moral distress with increasing years of experience, others did not, and suggested conditioning over time to the workplace environment or getting closer to retirement as possible explanations.[13,23,24] In a US-based survey in emergency medicine residents a burn-out prevalence rate of 76.1% was reported indicating that burn-out begins as early as during residency training.[25]

Fifty-eight percent of the surveyed clinicians in our study reported that a resuscitation attempt which they perceived as inappropriate caused moral distress. This is in line with a survey among emergency department nurses that reported a 4-fold increased probability of intrusive memories and significantly more emotional exhaustion when confronted with difficult or failed resuscitations.[26] The prolonged vulnerability of patients when they survive but have substantial residual cognitive, psychological and physical deficits further contribute to the accumulation of moral distress.[27]

Frequent perception of inappropriateness of CPR was independently associated with a significantly higher prevalence of intention to leave the job. This confirms the findings of earlier studies in other healthcare domains that perceived inappropriateness of care by clinicians working in internal medicine, surgery, neurology, and intensive care is independently associated with intention to or actual resignation.[9,28,29] Prior research showed that moral distress in nurses and physicians working in pediatrics, surgery, emergency departments, and critical care related departments results in changing jobs and leaving the profession.[12,29] Despite the fact that CPR is usually only a minor part of emergency clinician's work, the association potentially signifies the large impact inappropriateness of CPR can have on healthcare professionals. We also found a higher prevalence of intention to leave the job when clinicians often experienced moral distress. It is interesting that we did not find a higher prevalence of intention to leave the job among nurses compared to physicians; in most studies, the level of moral distress is higher in nurses than in physicians, a finding which might be related to the fact that care in most healthcare organizations is hierarchically managed by physicians.[13,30]

Forty-two percent of the clinicians in our survey did not report experiencing moral distress in relation to participating in a resuscitation they perceived as disproportionate. Reasons for this can be that clinicians deny the poor outcome to avoid having to make decisions themselves, or erroneously perceive the resuscitation as appropriate to cope with the situation if they are not allowed to make decisions regarding termination of resuscitation. Frequent exposure to inappropriate care can lead to deficient coping mechanisms, “professional blunting” and suppression of moral distress.[31]

Both the repeated experience of moral distress and its suppression are deleterious to the clinician and increase the risk of burn-out.[32,33] Ultimately this may lead to a fatalistic approach whereby resuscitation of current or future cardiac arrest patients with a better prognosis is mistakenly considered as incompatible with a good neurological recovery.[34] The erroneous appraisal by clinicians that resuscitation is more a ritual than a useful treatment might lead to ethically unacceptable actions such as “slow codes” where clinicians deliver suboptimal resuscitative care without the intention to strive for an optimal patient outcome.[35] This negative spiral should and can be prevented, provided that the ethical climate in the workplace allows clinicians to discuss within their team the moral dilemmas they experience due to care they perceive as inappropriate.[36] As such, moral distress can be an impetus for positive change and the development of empathy and compassion towards the patient.[37,38] Building this ethical climate may prevent clinicians from leaving their position or disrupting the continuity of care due to increased absenteeism.[12,39]

Previously, we found that the perception of inappropriateness of a resuscitation attempt was mainly determined by objective criteria such as non-shockable initial rhythm, non-witnessed arrest, and older age. This perception of inappropriateness was associated with a very low survival to hospital discharge which underscores its value as a marker

of actual inappropriate resuscitation attempts.[14] Therefore, the most important way to decrease moral distress, burn-out, and intention to leave the job among emergency clinicians is by identifying early those patients where resuscitation efforts are expected to have a dismal prognosis, and recording the patients' wishes in advance of a medical emergency. Given the impact inappropriate resuscitation attempts have on clinicians, as well as the considerable societal cost, a whole system approach is mandated. Priority needs to be given on the delivery of appropriate end of life care, so that CPR does not become a default ritual for patients who were never going to benefit from it.

Our results reinforce the importance of interprofessional collaboration and teamwork where feeling valued within the team and by the team leader improves the retention of clinicians.[21,40] Lastly, we provide additional support for the fact that a work environment that invites clinicians to debrief the appropriateness of a resuscitation attempt, successfully combats moral distress and burn-out among clinicians.[38] In many healthcare organizations this process can be facilitated when senior physicians act as role models by empowering staff to voice their perceptions and emotions and by facilitating the ethical climate.[36]

This study has a number of limitations. First, our results primarily reflect perceptions and intentions of respondents, which may be a select group that differs in certain aspects from the contacted population of clinicians. Detailed information on demographic and other characteristics of the entire targeted survey population was missing, which prevented calculation of response rates across centres and survey weighting to tackle potential non-response bias. Second, the cross-sectional design precludes conclusions about causal associations between perception of inappropriateness of CPR, associated moral distress, and the clinician's intention to leave the job. Future longitudinal studies that explore the complex dynamic interplay between these factors, while appropriately accounting for a range of both baseline and time-varying confounders, may be better suited to answer causal questions and to quantify actual job leave. Nonetheless, due to lack of randomisation, such studies may still be plagued by residual confounding bias. Third, the perception regarding inappropriateness of resuscitation attempts in the overall practice of the clinician may have been affected by recall bias. Finally, we cannot exclude that the intention to leave the job may be influenced by other factors such as interpersonal problems at work or at home, personal health problems, and dissatisfaction with remuneration.

Conclusion

We found that resuscitation attempts perceived as inappropriate by clinicians, and the extent to which such attempts are reported to cause moral distress, is associated with increased likelihood of a clinician's intention to leave the job. Interprofessional collaboration, teamwork, and regular interdisciplinary debriefing can potentially reduce the risk of staff attrition. It is paramount to decrease the number or duration of inappropriate resuscitation attempts through improved assessment of prognostic criteria for poor outcome after cardiac arrest.

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Author contributions

PD, KM, RP, SH, PDP and DDB designed the study. All authors except JS and JD contributed to the final version of the survey. All authors except KM, RP, JS, PDP, JD and DDB contributed to the data collection. PD, KM, RP, JD, DDB and JS analysed and interpreted the data. JS performed the statistical analysis. PD did the literature search and wrote the first draft of the report. PD and JS structured the tables and figures. All authors reviewed the draft, contributed to the revision of the report and approved the final version of the report.

Conflicts of interest

CAB is employed by the Regional Competence Centre for Acute Medicine in Western Norway (RAKOS) with financial support from the Norwegian Directorate of Health. He has participated in Global Resuscitation Alliance meetings sponsored by the Laerdal Foundation for Acute Medicine, TrygFonden and EMS2018. CD is Deputy Medical Director of the National Ambulance Service of the Republic of Ireland. The other authors declared no conflicts of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.resuscitation.2020.10.043.

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