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Review article

Factors associated with healthcare providers' satisfaction with end-of-life care in the intensive care unit: A systematic review

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ABSTRACT

Background: We aimed to synthesize published data on and identify factors associated with healthcare providers' satisfaction with end-of-life care for critically ill adults.
Methods: Electronic databases were searched from inception to January 23, 2023. We included trials involving adults admitted to intensive care units (ICUs) or high-dependency units to evaluate palliative care interventions.
Study Selection: The inclusion criteria were as follows: 1) Adult patients (age ≥18 years) or their family members admitted to the ICU or a high-dependency unit; 2) ICU palliative care interventions; 3) Randomized and non-randomized controlled trials; and 4) Full-text, peer-reviewed articles published in English. Two reviewers screened and extracted the data and assessed bias risk. The primary outcome was an improvement in the healthcare providers' satisfaction based on the validated scales.
Results: Out of 12 studies, 9 investigated combined dimension intervention. Healthcare providers' satisfaction improved in 6/7 (85.7%) of the studies testing educational intervention, 5/7 (71.4%) studies testing the effectiveness of palliative care team involvement, 4/5 (80%) of studies testing communication interventions, while 0/2 (0%) study testing ethic consultations.
Conclusions: Most of the tested palliative care interventions were associated with improved healthcare provider satisfaction in intensive care units. The impacts of such intervention on mental health and burden remain to be investigated in this field.

1. Introduction

Palliative care (PC) is an important option for patients admitted to intensive care units (ICUs) based on their prognosis and background. However, various problems with PC in the intensive care setting have been reported, such as delayed detection of the patient's terminal stage, inadequate symptom control, and lack of family support. Various studies have been conducted to resolve these problems, including approaches such as PC integration [1–4]. Thus far, most reviews in the area of PC have focused on patients and their families [5–7], with a few reports focusing on healthcare providers. The shortage of healthcare providers in ICUs has long been noted; however, the new coronavirus infection pandemic has exacerbated the situation [8]. Burnout among medical personnel working in ICUs has long been a problem as a cause of the shortage, and it has frequently been reported that it has its basis in end-of-life issues [9,10]. Recently, an increasing number of studies have evaluated the impact of PC interventions on healthcare providers at the end-of-life [11,12]. However, considerable variation exists in the methods of PC interventions and measures of satisfaction on the part of healthcare providers, depending on the report. Suppose a systematic review can be conducted to summarize the impact of PC on providers as well as approaches to PC interventions. In that case, it may be possible to advance end-of-life PC and address issues, such as provider burnout, by integrating PC. Therefore, this systematic review addressed the impact of PC interventions in the ICU on healthcare providers' satisfaction.

Abbreviation: PC, palliative care; ICU, intensive care unit; RCTs, randomized controlled trials.

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2. Methods

This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines [13]. The study protocol was registered with the International Prospective Register of Systematic Reviews at the National Institute for Health Research and the Centre for Reviews and Dissemination at the University of York (CRD42022370088).

2.1. Inclusion criteria

The inclusion criteria for trials in this review were as follows: 1) Population: adult patients (18 years of age and older) or their family members admitted to the ICU or a high-dependency unit; 2) Intervention: ICU PC interventions; 3) Study design: randomized and non-randomized controlled trials (RCTs and non-RCTs); 4) Publication type: full-text, peer-reviewed articles published in English, without date restrictions for the year of publication; and 5) Outcome: the outcome was healthcare providers' satisfaction.

2.2. Supplementary inclusion criteria

PC interventions in the ICU were categorized into the following five areas developed by the Systematic Review Group of the European Society of Intensive Care Medicine: 1) communication intervention, 2) ethics consultations, 3) PC team involvement, 4) educational interventions, and 5) advanced care planning interventions. Literature where even one of these interventions was used was considered for inclusion [6].

2.3. Exclusion criteria

The exclusion criteria for trials in this review were as follows: 1) Population: non-adult and non-ICU populations; 2) Intervention: studies with generic interventions beyond the scope of the definition by the Systematic Review Group of the European Society of Intensive Care Medicine that aimed to improve the quality of care of all ICU patients; 3) Study design: case reports, causeries, editorials/commentaries, opinion papers, studies with no outcome data, small studies (<20 patients), publications only as abstracts, and nonsystematic review papers; 4) Publication type: language other than English; and 5) Outcomes: not addressing healthcare providers or exclusion of the factors affecting satisfaction.

2.4. Literature search

The Medical Literature Analysis and Retrieval System Online, Cochrane Central Register of Controlled Trial, and Cumulative Index to Nursing and Allied Health Literature databases were searched from their inception up to January 2023. A search of the International Clinical Trials Registry Platform and ClinicalTrials.gov was also conducted to identify unpublished literature. The search strategy included Medical Subject Heading terms and free text words describing "palliative care" and "intensive care" (Appendix 1). In the search phase, the databases were searched without language restrictions. The bibliography of the included studies was reviewed to identify possible additional publications. EndNote (version X9; Clarivate Analytics, Philadelphia, PA, USA) was used to manage records and remove duplicates.

2.5. Study selection

First, two reviewers (SU and YT) independently screened the titles and abstracts from the database searches for inclusion in the review. Subsequently, two reviewers (SU and YT) obtained and assessed full-text articles to determine eligibility. Discrepancies were resolved through discussion with a third reviewer (HS). Rayyan software (QCRI, Doha, Qatar; http://rayyan.qcri.org) was used for the screening.

2.6. Data extraction

Two reviewers independently collected data from eligible studies using the forms designed by the authors. The extracted data included the study setting, country, participant demographics, intervention descriptions, and outcomes. If the data extracted by one reviewer conflicted with those extracted by another, the disagreement was resolved through discussion or consultation with a third reviewer (HS).

2.7. Risk of bias assessment

YT and SU independently assessed the risk of bias using the Cochrane Collaboration (Oxford, United Kingdom) RCT Risk of Bias and Risk of Bias in Non-randomized Studies of Interventions tools for non-randomized studies with regard to the following domains: bias arising from the randomization process, bias due to deviations from intended interventions, bias due to missing outcome data, bias in measurement of the outcome, and bias in the selection of the reported result [14,15]. Differences were resolved by consensus and consultation with a third reviewer (HS).

3. Results

3.1. Study selection

The search (through January 2023) identified 7159 references. Screening of titles and abstracts excluded 895 duplicates and 6128 irrelevant articles. Overall, 138 full-text articles were reviewed, and 12 articles that met the inclusion criteria were identified (Fig. 1) [11,16–26].

3.2. Characteristics of the included studies (Supplementary Table 1)

The characteristics of the included studies are presented in Supplementary Table 1. Two randomized [17,19] and 10 non-randomized studies [11,16,18,20–26] conducted between 2003 and 2022 were included. Most of the studies included were conducted in North America (9/12, 75%). The most common study designs were pre- and post-intervention trials (9/12, 75%). The most widely favored indicator of satisfaction was the original questionnaire on end-of-life care (4/12, 33%), followed by the Quality of Dying and Death questionnaire (3/12, 25%) (Table 1).

3.3. Risk of bias within studies (Figs. 2 and 3)

Two randomized studies were included as follows: one with a high risk of bias [17] and one with some concern risk of bias [19]. The high-risk bias study was affected by missing outcome data and outcome measurement bias. Studies with some concern for risk bias were affected by selection bias in the reported results. Ten non-randomized studies were included, all with a serious risk of bias [11,16,18,20–26]. Non-randomized studies were primarily influenced by confounding bias.

3.4. Satisfaction of healthcare provider (Table 2)

This review of healthcare providers' satisfaction with end-of-life care in ICUs included 12 studies (Supplementary Table 2). Of these studies, two were RCTs, and 10 were non-randomized

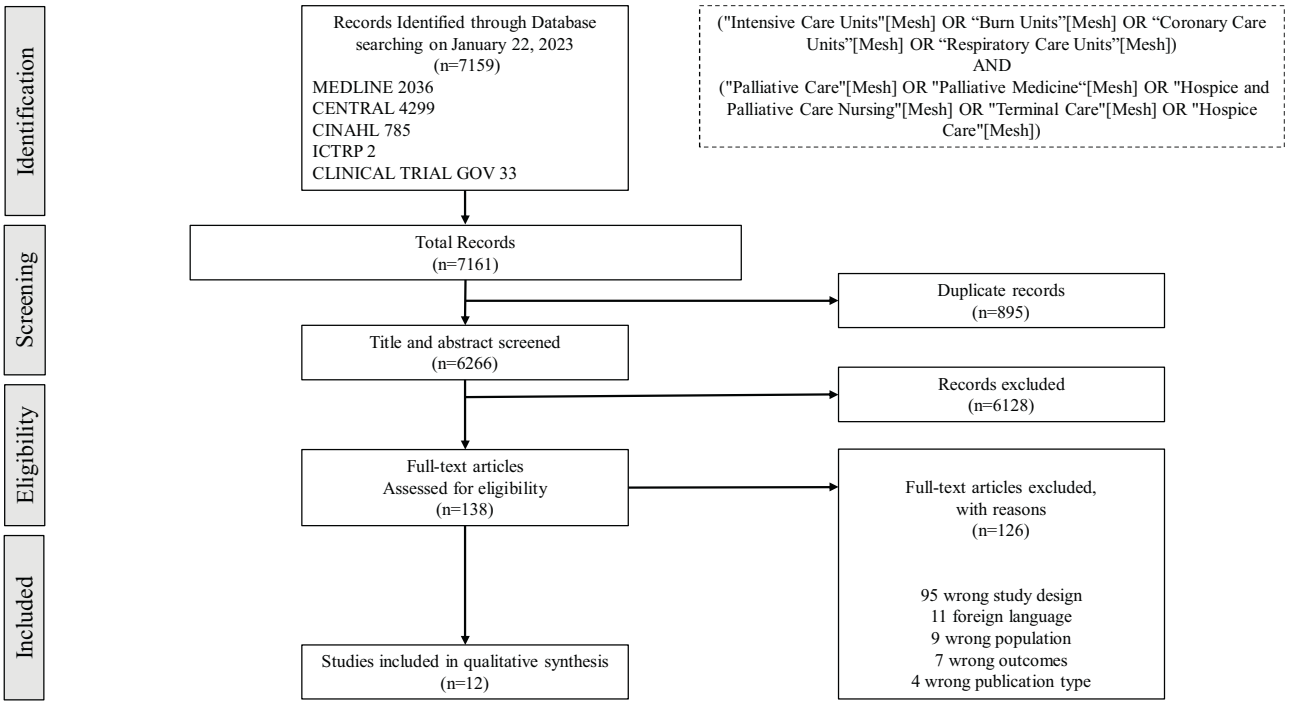

Fig. 1. Flow diagram of article inclusion.
MEDLINE: Medical Literature Analysis and Retrieval System Online, CENTRAL: Cochrane Central Register of Controlled Trials, CINAHL: Cumulative Index to Nursing and Allied Health Literature, ICTRP: International Clinical Trials Registry Platform.

Table 1
Outcome measures included in this study.

Outcome measures	Range	N (%)
Likert scale for end-of-life satisfaction (locally designed survey)	1–4 Likert scale, or 1–9 Likert scale	4 (33%)
QODD	0–100 points	3 (25%)
Likert scale for end-of-life communication (locally designed survey)	1–5 Likert scale	2 (17%)
MMD-HP	0–432 points	1 (8%)
MBI	0–6 Likert scale	1 (8%)
CES-D	0–100%	1 (8%)

CES-D: depression using the Centre for Epidemiologic Studies Depression scale; MBI: Maslach Burnout Inventory; MMD-HP: Measure of Moral Distress-Healthcare Professionals; QODD: Quality of Dying and Death.

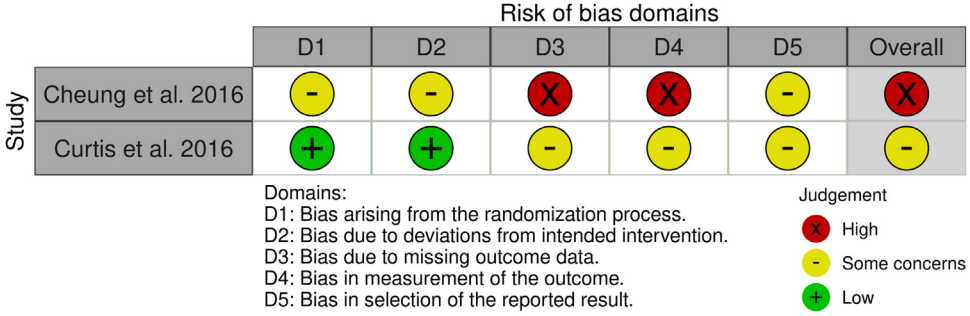

Fig. 2. Cochrane risk of bias tool v.2.0.

intervention studies. Healthcare providers' satisfaction significantly improved in four cases, showed a trend toward improvement in four other cases, and no difference was found in the other four cases.

Most studies (9/12) examined combined effects across multiple domains. Educational interventions were evaluated in seven studies [11,16,18,19,21,22,26], with six of them showing improvements in healthcare provider satisfaction. The primary methods include simulations, didactic training, and leadership courses. The effectiveness of PC team involvement was studied in seven trials [18,19,22–26], five of which led to increased satisfaction among healthcare providers. The primary PC team strategies involved PC order set/symptom management, identification/clarification of advance directives, and suggestions/"nudges"/consultations. Communication interventions were examined in five studies [11,20,22,24,26], four of which reported enhanced satisfaction

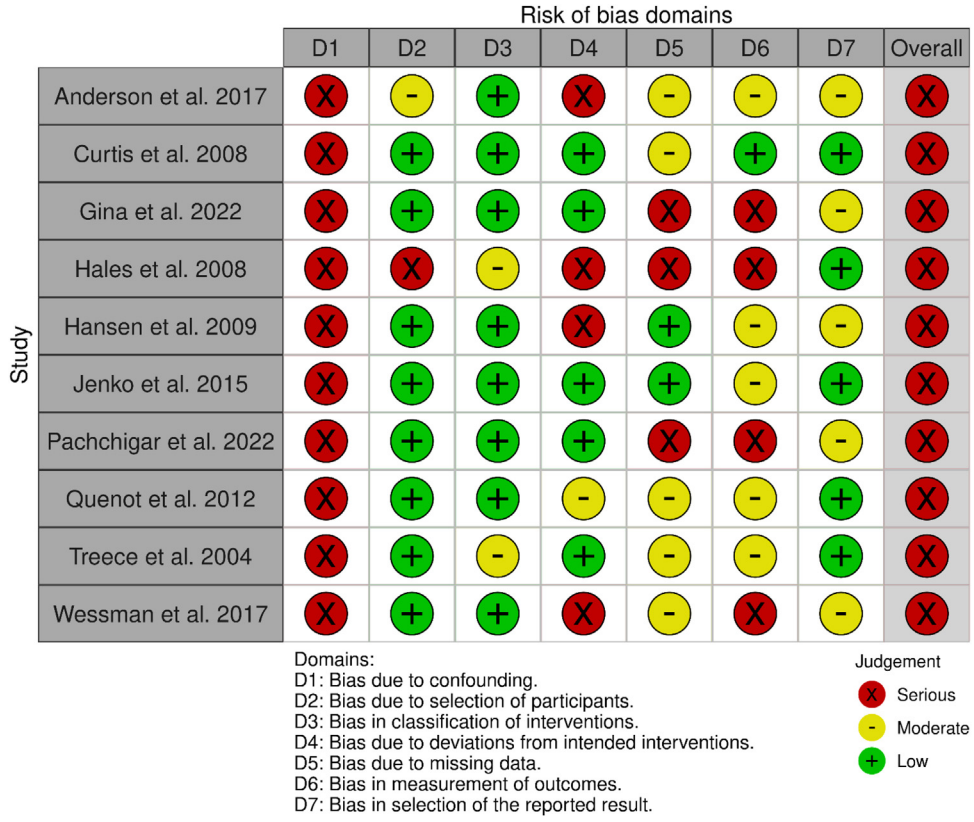

Fig. 3. ROBINS-I tool (Risk Of Bias In Non-randomised Studies - of Interventions).

Table 2
Type of intervention.

Domain	Intervention	N (%)
ACP interventions	None	None
Communication intervention	Brochures to family	2 (17%)
	Communication tool	1 (8%)
	Structured family meeting	4 (33%)
Educational interventions	Communication skill workshop	1 (8%)
	Didactic training	3 (25%)
	Educational material (nurse)	2 (17%)
	Educational material (family)	2 (17%)
	Leadership courses	3 (25%)
	Simulation	3 (25%)
Ethics consultations	Ethics consultations	2(17%)
PC team involvement	Identification/clarification of ADs	4 (33%)
	Identification of trigger criteria/assessment	1 (8%)
	Palliative care order set/symptom management	4 (33%)
	Suggestions/'nudges'/consultations	4 (33%)
	Support with goals of care	1 (8%)

ACP: Advance care planning; ADs: advance directives; PC: palliative care.

among healthcare providers. Interventions included structured family meetings, brochures, and other communication tools. Ethics consultations were studied in two trials [17,20]; however, neither of the trials improved healthcare providers' satisfaction.

4. Discussion

We reviewed the impact of PC interventions in the ICU on the satisfaction of healthcare providers. Although this was the first review to focus on healthcare professionals, satisfaction and effectiveness results varied. Educational interventions and PC team involvement resulted in the greatest improvements. The interventions and assessment scales included in the studies were diverse, and a definitive conclusion regarding healthcare providers' satisfaction with PC, including appropriate interventions and assessment scales, could not be drawn. However, there have been many reports of PC interventions positively impacting healthcare provider satisfaction, and no detrimental effects of the interventions were observed. Therefore, further research into appropriate PCs should be conducted.

The rating scale for the satisfaction of healthcare professionals varied from one study to another. Interventions also differed from one study to another; therefore, it is currently unclear which rating scale is optimal. The validity of each rating scale, as well as interventions, is an issue for the future.

PC interventions are performed using various methods to improve healthcare providers' satisfaction. There have been both effective and ineffective interventions. Six of the seven studies on educational interventions (one RCT and six non-RCTs) observed improvements. Previous research suggests that combining multiple educational interventions mitigates learners' feelings of isolation and decreases their interest in the subject [27]. In this review, most research incorporated a combination of multiple educational interventions.

All single-center pre-intervention–post-intervention trials improved healthcare providers' satisfaction [11,16,18,21,22,26], whereas a multicenter randomized trial failed to improve [19]. Trials combining multiple educational interventions may face potential underdosing when implemented by external specialists, highlighting the need for in-facility support and implementation [19]. Therefore, implementing a blended educational intervention may be effective for educators from within the facility.

Of the seven studies on PC team involvement (one RCT and six non-RCTs), improvements were observed in five. In many studies

where improvements were observed, the identification/clarification of advance directives and the Palliative Care order set/symptom management were implemented together [22,24–26]. In a single-site pre-intervention–post-intervention trial, the effectiveness of an order form comprising directives for discontinuing life-sustaining measures, regulating the use of narcotics and benzodiazepines, and specifying the discontinuation of mechanical ventilation was examined. The implementation of this order form has led to an improvement in symptom control [25]. Additionally, previous studies have reported that care disproportionate to prognosis is associated with mental distress in healthcare providers, increased workload, and decreased quality of care [28]. The identification/clarification of advance directives may have protected patients from care that was disproportionate to their prognosis, improved quality of care, including symptom management, and enhanced mental distress among healthcare providers [29].

There may be a correlation between identifying and clarifying advance directives, the PC order set/symptom management, and healthcare providers' satisfaction.

Of the five studies on communication interventions (non-RCTs), four observed improvements, contributing to alleviating psychological distress among healthcare providers. Structured family meetings, in which time for family members to express themselves was ensured, enhanced communication between patients' families and healthcare providers, ultimately ameliorating the providers' psychological distress [11]. In a single-site pre-intervention–post-intervention trial that examined composite interventions, including brochures to family, communication interventions also helped alleviate stress for healthcare practitioners in their work. These pamphlets explained basic medical terminology and what to expect in end-of-life care [26]. Written communication is particularly effective in end-of-life situations where verbal communication may not be feasible.

Two trials assessed the effectiveness of ethics consultations; however, they found no improvement in healthcare provider satisfaction [17,20]. In a single-site randomized study, consultations and those pertaining to regular ICU end-of-life care were evaluated by a team of PC physicians, residents, and clinical nurse consultants. However, potential discord in communication may have been raised owing to bedside healthcare providers not participating in the team, suggesting that the involvement of bedside healthcare providers in ethics consultations enhances their effectiveness [30].

This review had some limitations. First, most included studies were small observational studies that did not adjust for confounding factors. The interventions and outcome measures varied across the included studies, and the protocols were heterogeneous. This makes it challenging to assess integrated outcomes, resulting in descriptive reporting. Second, there were a few studies with a low risk of bias among those included. Third, most of the studies included in this review were conducted in North America and did not consider regional differences in ethical climates and laws [31]. The effectiveness of palliative interventions might vary depending on the ethical climate and laws in different regions. The effectiveness of research has also been reported from multiple directions, classifying ethical interventions into several domains [29]. Palliative interventions tailored to regional and individual ethics would be another area for consideration.

5. Conclusions

In this review, we evaluated the effects of PC interventions on ICU healthcare providers' satisfaction. Many interventions have been found to positively affect healthcare providers' satisfaction and stress, although there have also been reports of their limited effectiveness. At the very least, no negative effects were observed, and there is a potential benefit in implementing palliative interventions regarding healthcare providers' satisfaction. Therefore, this should be actively pursued in the future.

Human and animal rights

The authors declare that the work described has been carried out in accordance with the Declaration of Helsinki of the World Medical Association revised in 2013 for experiments involving humans as well as in accordance with the EU Directive 2010/63/EU for animal experiments.

Informed consent and patient details

The authors declare that this report does not contain any personal information that could lead to the identification of the patient(s).

Disclosure of interest

The authors declare that they have no conflicts of interest.

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Author contributions

Y.T., S.U., and H.S. had full access to the study data and take responsibility for its integrity and analysis. Y. T., S. U., and H. S. contributed to acquisition, analysis, and interpretation of data, and Y. T., S. U., K. F., and M. N. contributed to study design and drafting of the manuscript.

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.accpm.2023.101330.

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